Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 1 Problem no.: 3

Juror: PLESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 Ø

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3 Ø

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 1 Problem no.: 3

Juror: Thomas Lindner Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Czech Republic — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Korea — 5

Physics ±3 — 1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −0,5

- ☒ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 1 Problem no.: ____

Juror: Ileana Marsarch Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ____ 5

Physics ±3 ☐

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: ____ 5

Physics ±3 ☐

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent 7

Rev.: ____ 5

Physics ±3 ☐

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ☐

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 ☐

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 1 Problem no.: 3

Juror: Chuan Yong Li Signature: Chuan Yong Li

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Czech Republic — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Korea — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 1 Room: 4 Stage: 1 Problem no.: 3

Juror: [illegible] Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SE — 5

Physics ±3 -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0.25

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: CZ — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.25

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: KR — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0.25

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 2 Problem no.: 12

Juror: PUBSCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: 5

Physics ±3 -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 2 Problem no.: 12

Juror: Thomas Lindner Signature: Thomas Lindner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Republic — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Korea — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Ukraine — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 8 Room: A Stage: 2 Problem no.: 12

Juror: Ilona Nasarek Signature: Ilona Nasarek

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 2 Problem no.: 12

Juror: Chuan Yong Li Signature: Chuan Yong Li

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Republic — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Korea — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: 4 Stage: 2 Problem no.: 12

Juror: KRN 2420 Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CZ — 5

Physics ±3 -0.75

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: KR — 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: KT — 5

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.25

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 3 Problem no.: 2

Juror: PLFISCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0,3

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,3

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4,5

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 3 Problem no.: 2

Juror: Thomas Lindner Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Ukraine — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 3

Rev.: Sweden — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 3 Problem no.: 2

Juror: Flavia Pearsall Signature: Flavia Pearsall

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 [ ]

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 [1]

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 [1]

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter [7]

Opp.: _____ 5

Physics ±3 [ ]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 [ ]

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent [5]

Rev.: _____ 5

Physics ±3 [-1]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 [ ]

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer [4]

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 3 Problem no.: 2

Juror: ChuanYong Li Signature: ChuanYong Li

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 — +0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Sweden — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 3 Problem no.: 2

Juror: [illegible] Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: [illegible] — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.25

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: MA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: [illegible] — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.25

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: F Problem no.: 14

Juror: FUES CH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 4 Problem no.: 14

Juror: Thomas Lindner Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UKR — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Sweden — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Czech Republic — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4,5

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 3 Problem no.: _____

Juror: Nina Meinardi Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 4 Problem no.: 14

Juror: ChuaYong Li Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter and opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 — -0.5

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0.25

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — -0.25

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Sweden — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.5

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +0.5

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Czech Republic — 5

Physics ±3 — +0.5

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Reviewer ±1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: A Stage: 4 Problem no.: 15

Juror: KEPO 2402 Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: YA — 5

Physics ±3 -0.25

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.4

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: SE — 5

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: CZ — 5

Physics ±3 0.75

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.25

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 1 Room: A Fight Assistants: Zixi Jia

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Sweden	Czech Republic	Korea	Czech Republic	Korea	Ukraine	Korea	Ukraine	Sweden	Ukraine	Sweden	Czech Republic
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Martin Plesch	5	7	4	6	5	4	7	4	5	3	5	6
Thomas Lindner	5	6	6	4	7	6	7	3	7	3	5	5
Ilana Massarek	5	7	5	5	7	6	7	5	4	3	6	6
Chuan Yong Li	7	6	7	5	6	5	7	5	7	4	7	6
Kreso Zadro.	5	6	5	4	6	6	6	4	6	4	6	6
Acting Team Member	~~Jan~~ ~~Mazáč~~ Alexander Åkesson	Jan Mazáč	~~Cheng~~ X ~~Haan~~ Cheong Eun Ahn	Dalibor ~~Republic~~ Repček	Lee Jung Min	Kosobutsky Oleksii	Anthony Cho	Mykyta Shchedrolo-syev	Sabrina Yue Wang	Danylo Vanushchyk	Alexander Åkesson	Jan Mazáč
Rejected Problems	9						11			13		
Accepted Problem	3			12.			2			14		

Signature Fight Assistant: Zixi Jia Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 1 Problem no.: 8

Juror: Reichle, Rainer Signature: Reichle

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter and opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — 0

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Reporter ±1 — -1

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Taiwan — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Thailand — 5

Physics ±3 — 1,5

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0

- [ ] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 1 Problem no.: 8

Juror: REAGER Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria (Petja Stefanova) — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Taiwan (Wei-Hao Chen) — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Thailand (Ramin Farhangfar) — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 1 Problem no.: 8

Juror: Felicia Ullsted Signature: Felicia Ullsted

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — -1

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — -1

- [x] Quality of experimental technique(s)
- [x] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Taiwan — 5

Physics ±3 — +2

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +0,5

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Thailand — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1(1) Room: C Stage: 1 Problem no.: 8

Juror: Shchetnikov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Taiwan — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Thailand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 10 Room: C Stage: 1 Problem no.: 8

Juror: Astashynski Signature: B.A.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Taiwan — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Poland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 2 Problem no.: 12

Juror: Reichle Signature: Reichle

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 — 1,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0,5

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Thailand — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Bulgaria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 2 Problem no.: 12

Juror: REGNER Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan

Pei-Hsin Lin

5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Thailand

Sovanmeechaiko

5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: Bulgaria

Ivan Tsonev

5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 2 Problem no.: 12

Juror: Felicia Ullsten Signature: Felicia Ullsten

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 — +2

- [+] Correct and relevant physics
- [+] Scientific approach
- [+] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — +0.5

- [+] Quality of experimental technique(s)
- [ ] Structure
- [+] Explanation of formulae and symbols
- [+] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [+] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Thailand — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Bulgaria — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 2 Problem no.: 12

Juror: Shchetyikov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 +1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 +1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 0

- [x] Quality of experimental technique(s)
- [x] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter 7

Opp.: Thailand — 5

Physics ±3 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

Presentation ±1 0

- [ ] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Opponent ±1 +1

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent 6

Rev.: Bulgaria — 5

Physics ±3 0

- [ ] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reviewer ±1 0

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 2 Problem no.: 12

Juror: Hofasky nski Signature: B. A

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Thailand — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Bulgaria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 3 Problem no.: 14

Juror: Reichelt Signature: Reichelt

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0 -

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Bulgaria — 5

Physics ±3 — 1,0

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — #6

Rev.: Taiwan — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 3 Problem no.: 14

Juror: REGNER Signature: Regner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — Tarakent Marea — 5

Physics ±3 — -1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Bulgaria — Ivan Toonev — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Taiwan — Yan-Su Wu — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 3 Problem no.: 14

Juror: Felicia Ullstad Signature: Felicia Ullstad

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Bulgaria — 5

Physics ±3 — +2,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Taiwan — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 3 Problem no.: 14

Juror: Shchetnikov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

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- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

10

Final Grade: Reporter — 4

Opp.: Bulgaria — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Taiwan — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: C Stage: 3 Problem no.: 14

Juror: Ostashynski Signature: B A

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
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- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — -1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Bulgaria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Taiwan — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 1 Room: C Fight Assistants: Wang Jin

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Bulgaria	Taiwan	Thailand	Taiwan	Thailand	Bulgaria	Thailand	Bulgaria	Taiwan			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
③ Rainer Reichle	4	6	7	7	6	5	3	6	7			
① Ulrike Regner (女 [illegible])	3	8	6	8	4	8	3	5	7			
④ Felicia Ullstad (女)	3	8	6	8	6	6	2	7	7			
⑤ Andrey Shchetnikov	4	7	5	7	6	6	4	6	6			
② Volontsin Astashynski	3	8	5	7	5	5	3	6	5			
Acting Team Member	Petyo Stetanova	Wei-Tao	Pawin. Tae-Choyotin	Pei-Hsien Liu	Sotamon Chaichan	Ivan Tsonev	Tarakit Maree	Ivan Tsouev	Yun-Ju Wu			
Rejected Problems	16			X			17, 6, 7, 4					
Accepted Problem	8			12			14					

Signature Fight Assistant: Wang Jin Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Water bomb

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 1 Problem no.: 9

Juror: Nirut Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Nigeria — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Slovenia — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

reject. 12

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 1 Problem no.: 9

Juror: Kathryn Zealand Signature: KZealand

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Tobias — 5

Need more explanation of why - only empirical formulae

Physics ±3 — $-1\frac{1}{2}$

- ☒ Correct and relevant physics
- ☑ Scientific approach — not deep enough
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — $+\frac{1}{2}$

Funny :)

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

excellent videos + model

Reporter ±1 — 0

- ☑ Quality of experimental technique(s) — Rigour, but missing variables. eg. surface shape, elastic types, size etc.
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☒ Contribution to the discussion

need to be able to answer open ended questions

Final Grade: Reporter — 4

Opp.: Jim — 5

Recommend use more time for opponent presentation

Physics ±3 — −1

need to state own views

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

need to engage on experiments too

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

good questions but small confusion between surface + elastic tensors

Need to engage with his experimental results. why

Final Grade: Opponent — 4

Rev.: Erik — 5

Did not engage in physics except for questions.

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach — NO
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — $-\frac{1}{2}$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — $-\frac{1}{2}$

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed — only once
- ☑ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 1 Problem no.: 9

Juror: KUNDRACIK Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: GERMANY — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +2/3

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — +1/3

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: NIGERIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,8

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: SLOVENIA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reviewer ±1 — -0,5

- ☒ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 1 Problem no.: 9

Juror: Chan Oung Park Signature: Chan Oung Park

12X, 9

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression +1

Reporter ±1 — 1

- ☑ Quality of experimental technique(s) +0.5
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Nigeria — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion -0.5

Final Grade: Opponent — 5

Rev.: Slovenia — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics +0.5
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent -0.5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 1 Problem no.: 9

Juror: Assen Kyuldjiev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
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- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.3

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.3

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Nigeria — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 3

Rev.: Slovenia — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 2 Problem no.: 17 Chocolate

Juror: Nirut Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Slovenia — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Germany — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 2 Problem no.: 17

Juror: ChanOung Park Signature: ChanOung Park

8X, 3X, 12X, 17

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — −2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −1

- ☐ Clear and understandable −0.5
- ☐ Appropriate manner
- ☐ Overall impression −0.5

Reporter ±1 — −1

- ☑ Quality of experimental technique(s) −0.5
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions −0.5
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 1

Opp.: Slovenia — 5

Physics ±3 — −0.5

- ☑ Correct and relevant physics −0.5
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions +0.5
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Germany — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent 0.5
- ☑ Draws attention to points missed by the reporter or the opponent

6.5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 2 Problem no.: 17

Juror: Assen Kyuldjiev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Slovenia — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Germany — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,3

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

reject: 8, 3, 12

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 2 Problem no.: 17

Juror: Kathryn Zealand Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Zainab — 5

no experiments. not deep enough

Physics ±3 — -2

- ☑ Correct and relevant physics
- ☒ Scientific approach
- ☑ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — -½

- ☒ Clear and understandable
- ☑ Appropriate manner — speak louder
- ☑ Overall impression

too much text on slides

Reporter ±1 — -1

- ☒ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols — no formulae.
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

1.5 round up. — Final Grade: Reporter **2**

Opp.: Eric — 5

use more of first 4 mins to discuss theory

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Good job with little to work with. you need to lead discussion

Final Grade: Opponent **6**

Rev.: Tobias — 5

no deeper physics.

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **6**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 2 Problem no.: 17

Juror: KUNDRATEK Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NIGERIA — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: SLOVENIA — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: GERMANY — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +0,7

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 3 Problem no.: 14

Juror: Asen Kyuldjiev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **4**

Opp.: — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **8**

Rev.: — 5

Physics ±3 -0.1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.6

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0.9

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **3**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 3 Problem no.: 14

Juror: Chan Oung Park Signature: Chan Oung Park

14

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner +0.5
- ☐ Overall impression

Reporter ±1 — -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols -0.5
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Germany — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☑ Scientific approach +0.5
- ☑ Validity of conclusions +0.5
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report +0.5
- ☑ Finds shortcomings or errors in the report +0.5
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Nigeria — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☑ Scientific approach +0.5
- ☐ Validity of conclusions
- ☑ Accurate answers +0.5

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed +0.5
- ☑ Relevance of questions to both the reporter and the opponent +0.5
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

rubber motor

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 3 Problem no.: 14

Juror: Nirut Signature: Nirut

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter and opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 [ ]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 [ ]

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter [5]

Opp.: Germany — 5

Physics ±3 [2]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 [ ]

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent [7]

Rev.: Nigeria — 5

Physics ±3 [ ]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 [ ]

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer [5]

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: 0 Stage: 3 Problem no.: 14.

Juror: Kathryn Zealand Signature: K Zealand

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

need to be clear about assumptions and interpretations

Physics ±3 −½

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +½

- ☒ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

too fast.

Reporter ±1 0

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: 5

Physics ±3 +½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +½

- ☑ Clear and understandable
- ☑ Appropriate manner - careful on aggressions
- ☑ Overall impression

Opponent ±1 +1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

excellent questions!
great use of whiteboard
don't get hung up on interpretation of time

7.5↑

Final Grade: Opponent 8.

Rev.: 5

Physics ±3 −½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 0

- ☑ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 3 Problem no.: 14

Juror: KWADRATEK Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SLOVENIA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

too fast, insecure, time left

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: GERMANY — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: NIGERIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 3 Problem no.: 14

Juror: ZENEI PÉTER Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SLOVENIA — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: GERMANY — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: NIGERIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

No 14 – Rubber Motor

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 3 Problem no.: _____

Juror: Declan Alvaro Signature: Alvaro

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Tofast

Reporter ±1 — +1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols → not explained
- ☒ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Germany — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Nigeria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −1

- ☒ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 3 Problem no.: 14

Juror: Leszek Grocholski Signature: L. Grocholski

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Germany — 5

Physics ±3 — 1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Nigeria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 2 Problem no.: 17

Juror: Leszek Gladysz Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Slovenia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Germany — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 2 Problem no.: 17

Juror: Declan Ahern Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — -2

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Slovakia — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☒ Overall impression

Opponent ±1 — 1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Germany — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 12 Room: D Stage: 2 Problem no.: 17

Juror: JENEI PÉTER Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NIGERIA — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: SLOVENIA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: GERMANY — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 1 Problem no.: 9

Juror: Declan Ahern Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3: 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1: 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter: 6

Opp.: 5

Physics ±3: -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1: 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent: 4

Rev.: 5

Physics ±3: 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1: 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer: 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): _____ Room: D Stage: 1 Problem no.: 9

Juror: G Toolerich Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany **5**

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Nigeria **5**

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Slovenia **5**

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 1 Problem no.: 9

Juror: JENEI PETER Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: GERMANY — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: NIGERIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: SLOVENIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Round: 1 Room: Group D Fight Assistants: Zheng Yu

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Germany	Nigeria	Slovenia	Nigeria	Slovenia	Germany	Slovenia	Germany	Nigeria			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Nirut Pussadee	6	5	5	2	5	5	5	7	5			
Chan Oung Park	7	5	5	1	5	6	5	7	7			
Assen Kyuldjiev	5	3	4	2	5	5	4	8	3			
Kathryn Zealand	4	4	3	2	6	6	5	8	5			
Frantisek Kundracik	6	4	5	2	6	7	6	8	5			
Acting Team Member	Tobias Gerbracht	Jim Smoigberale	ERIK PLEŠKO	Zainab Rabiu	UROŠ ZAVRTANIK	Tobias Gerbracht	JANEZ TURNŠEK	Felix Wechsler	Ibrahim Kabir			
Rejected Problems	12. Cold ballon			8. Freezing droplets 3. Twisted rope 12 Cold balloon								
Accepted Problem	9. Water bombs			17. Chocolate hysterisis			14. Rubber motor					

Signature Fight Assistant: ZHENG YU Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 1 Problem no.: 15

Juror: O'NEILL Signature: P O'Neill

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SINGAPORE — 5

Physics ±3 — 3

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 9

Opp.: HUNGARY — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — ½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: CHINA — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — ½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — ½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 1 Problem no.: 15

Juror: Prapun Manyum Signature: P. Manyum

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapor R#17, 3 — 5

Physics ±3 — 1.5

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Reporter ±1 — 0.5

- [x] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Hungary — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Opponent ±1 — 0.5

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: China — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 1

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 1

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): I Room: E Stage: 1 Problem no.: 15

Juror: IVAN ANTSIPAU Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SINGAPORE — 5

Physics ±3 — +2

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 8

Opp.: HUNGARY — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Opponent ±1 — -1

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 3

Rev.: CHINA — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0

- [x] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 1 Problem no.: 15

Juror: FRANCIS EKWENTA Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Hungary — 5

Physics ±3 — +

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: China — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 1 Problem no.: 15

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 2 — 2

- ☑ Correct and relevant physics
- ☑ Scientific approach Expt.
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner Too fast
- ☐ Overall impression

Reporter ±1 +0.5 — 0.5

- ☐ Quality of experimental technique(s) ↑ no description
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Too distracting

Final Grade: Reporter — 7

Opp.: Hungary — 5

Physics ±3 -0.5 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

4

Final Grade: Opponent — 4

Rev.: China — 5

Physics ±3 2 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 2 Problem no.: 5

Juror: PHIL O'NEILL Signature: PJO'Neill

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: HUNGARY — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: CHINA — 5

Physics ±3 — ½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — ½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: SINGAPORE — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 2 Problem no.: 5

Juror: Pragun Manyum Signature: P. Manyum

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — –

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: China — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — –

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Singapore. — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): I Room: E Stage: 2 Problem no.: 5

Juror: IVAN ANTSIPAU Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: HUNGARY 5

Physics ±3 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter 5

Opp.: CHINA 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ±0

- ☑ Clear and understandable
- ☒ Appropriate manner
- ☑ Overall impression

Opponent ±1 ~~0~~ +1

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 8

Rev.: SINGAPORE 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 2 Problem no.: 5

Juror: FRANCIS EKWENTA Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: China Singapore — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: Singapore — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **8**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 2 Problem no.: 5

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 −0.5 — 4.5

- ☐ Correct and relevant physics
- ☐ Scientific approach nothing innovative
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner good presence nice connection
- ☐ Overall impression

Reporter ±1 0.5 — 0.5

- ☐ Quality of experimental technique(s) ✓
- ☐ Structure ✓ bit too much though!
- ☐ Explanation of formulae and symbols ✓
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate ✓
- ☐ References, proper citations of ideas and input of others ~
- ☐ Novelty of the report No
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: China — 5

Physics ±3 +1 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −0.5 — −0.5

- ☐ Clear and understandable
- ☐ Appropriate manner too
- ☐ Overall impression aggressive "I think they are both important"

Opponent ±1 0.5 — 0.5

- ☐ Response to the reporter's solution ✓
- ☐ Shows the strong and weak points of the report ✓
- ☐ Finds shortcomings or errors in the report ~
- ☐ Relevance of the questions ~
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Singapore — 5

Physics ±3 2 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 3 Problem no.: 6

Juror: PHIL O'NEILL Signature: PJO'Neill

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 2½ | 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 ½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 ½

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: _____ 5

Physics ±3 ½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 ½

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ½

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 ½

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 3 Problem no.: 6

Juror: Prapun Manyum Signature: P. Manyum

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 — –

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Singapore — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Hungary — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — –

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — –

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 3 Problem no.: 6

Juror: IVAN ANTSIPAU Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CHINA — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: SINGAPORE — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: HUNGARY — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 3 Problem no.: 6

Juror: KATALIN BENEDEK Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Singapore — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Hungary — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 3 Problem no.: 6

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 0.5 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Singapore — 5

Physics ±3 1.5 — 1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.5 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Hungary — 5

Physics ±3 −1 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Non-voting Junior

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 3 Problem no.: _____

Juror: KUBINEC Signature: Kubinec

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Singapore — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Hungary — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Non-voting

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 2 Problem no.: 5

Juror: KUBINEC Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: China — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Singapore — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Non-Voting

Scoring Guidelines

Fight (Round no.): 1 Room: E Stage: 1 Problem no.: 15

Juror: Pavol Kubinec Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

FINAL 9

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

3

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0,5

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 0,5

Opp.: Hungary — 5

FINAL 7

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0,5

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0,5

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 0

Rev.: China — 5

FINAL 9

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

1

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Ab own ideas!

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 1 Room: E Fight Assistants: Fang lin Lin

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Singapore	Hungary	China	Hungary	China	Singapore	China	Singapore	Hungary			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Philip O' Neil	9	5	7	5	6	8	7	6	5			
Prapun Manyam	8	7	9	6	6	8	6	7	6			
Ivan Antisnaw	8	5	6	5	8	9	7	7	5			
Francis Ejike Ekweke	7	5	7	7	6	8	7	7	6			
~~Francis~~ David Kell	7	4	8	5	6	8	6	7	4			
Acting Team Member	Li Bingjian	András Laukó ~~Andia Lau~~	Zhao Yi Xin	Béda Ármin	Liu Ruihao	Joal Tam	Lu Sicong	Li Bingjian	Béda Ármin			
Rejected Problems	3, 17											
Accepted Problem	15			5			6					

Signature Fight Assistant: Fang lin Lin Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 1 Problem no.: 7

Juror: G. Jennings Signature: G C Jennings

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — Lucas Levy — 5

Physics ±3 — 4

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☒ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **5**

Opp.: Georgia — Luka Malaskhia — 5

Physics ±3 — -0.5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent **4**

Rev.: Australia — Jesse Tong — 5

Physics ±3 — 1.0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — 0.5

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 1 Problem no.: 7

Juror: O. Inisheva Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil

5

Physics ±3 0,5

- ☐ Correct and relevant physics ±
- ☐ Scientific approach
- ☐ Validity of conclusions +
- ☐ Accurate answers −

Presentation ±1 0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s) −
- ☐ Structure −
- ☐ Explanation of formulae and symbols −
- ☐ Appropriate models, conformity of dimensions +
- ☐ Slides, on-site experiments, audio, video, as appropriate −
- ☐ References, proper citations of ideas and input of others +
- ☐ Novelty of the report −
- ☐ Contribution to the discussion +

Final Grade: Reporter 6

Opp.: Georgia

5

Physics ±3 +0,5

- ☑ Correct and relevant physics +
- ☐ Scientific approach
- ☑ Validity of conclusions +
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0,5

- ☑ Response to the reporter's solution +
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions +
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Australia

5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1 + 0,5

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 1 Problem no.: 7

Juror: X Valeriaus Signature: X Valeriaus

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Biasi — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Scagià — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Kastig — 5

Physics ±3 — 1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — /

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: — Problem no.: 7 Pool P.

Juror: W. MEEVASANA Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — Lucas Levy — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics ✓
- ☐ Scientific approach ✓
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: GE. — Luka Malakhia — 5

Physics ±3 — 1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Au — Jose Tom. — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 1 Problem no.: 7

Juror: Jakob Lavrød Signature: Jakob Lavrød

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 3

Rev.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 2 Problem no.: 14

Juror: G. Jennings Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia (Giorgi Tsirekidze) — 5

Physics ±3 — -2

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0.5

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — 0.5

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Australia (Alastair Butcher) — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — +0.5

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Opponent ±1 — -0.5

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Brazil (Leonardo Fushikeu) — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.25

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — -0.25

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

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Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 2 Problem no.: 14

Juror: O. Inisheva Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia

Giorgi Tsirekidze

5

Physics ±3 −0,5

- ☐ Correct and relevant physics −
- ☐ Scientific approach −
- ☐ Validity of conclusions −
- ☐ Accurate answers +

Presentation ±1 0

- ☑ Clear and understandable +
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −0,5

- ☑ Quality of experimental technique(s) +
- ☐ Structure −
- ☐ Explanation of formulae and symbols −
- ☐ Appropriate models, conformity of dimensions −
- ☑ Slides, on-site experiments, audio, video, as appropriate +
- ☐ References, proper citations of ideas and input of others −
- ☐ Novelty of the report −
- ☑ Contribution to the discussion +

Final Grade: Reporter **5**

Opp.: Australia

Al. Butcher

5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 +1

- ☑ Response to the reporter's solution +
- ☐ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report +
- ☑ Relevance of the questions +
- ☑ Contribution to the discussion +

Final Grade: Opponent **6**

Rev.: Brazil

Leonarda Gushiken

5

Physics ±3 0

- ☑ Correct and relevant physics +
- ☐ Scientific approach
- ☑ Validity of conclusions +
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☑ Provides a thorough review of report and discussion +
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent +
- ☑ Draws attention to points missed by the reporter or the opponent +

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **6**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 2 Problem no.: 14

Juror: X. VATERLAUS Signature: X. Vaterlaus

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter ±1 — 0

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Australia — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Brasil — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Rubber motor

Scoring Guidelines

Fight (Round no.): _____ Room: _____ Stage: _____ Problem no.: K1

Juror: W. Meevasana Signature: _____

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ge Giogi — 5

Physics ±3 — 0

- ☐ Correct and relevant physics ✓
- ☐ Scientific approach ✗
- ☐ Validity of conclusions ✓
- ☐ Accurate answers ?

Presentation ±1 — −

- ☐ Clear and understandable ?
- ☐ Appropriate manner ok
- ☐ Overall impression −0.5

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: An Alastair — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Brazil Leonardo — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 2 Problem no.: 14

Juror: Jakob Lavrød Signature: JakobLavrød

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 −1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 2

Opp.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: 5

Physics ±3 −0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 −0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 3 Problem no.: 13

Juror: G. Jennings Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — Douglas Coulter — 5

Physics ±3 -2

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 +0.5

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter 4

Opp.: Brazil — Giovani Ceotto — 5

Physics ±3 0

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0.5

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 -0.5

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent 5

Rev.: Georgia — Giorgi Tseneteli — 5

Physics ±3 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Reviewer ±1 +0.5

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 3 Problem no.: 13

Juror: O.Iuisheva Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — Douglas Coulter — 5

Physics ±3 −1

- [x] Correct and relevant physics −
- [x] Scientific approach − no stability
- [ ] Validity of conclusions
- [x] Accurate answers −

Presentation ±1 +0

- [x] Clear and understandable +
- [ ] Appropriate manner
- [x] Overall impression

Reporter ±1 +1

- [ ] Quality of experimental technique(s) −
- [x] Structure +
- [x] Explanation of formulae and symbols +
- [x] Appropriate models, conformity of dimensions +
- [x] Slides, on-site experiments, audio, video, as appropriate +
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [x] Contribution to the discussion +

Final Grade: Reporter 5

Opp.: Brazil — Giovani Ceotto — 5

Physics ±3 +0,5

- [x] Correct and relevant physics +
- [x] Scientific approach +
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0,5

- [x] Clear and understandable +
- [x] Appropriate manner ±
- [x] Overall impression ±

Opponent ±1 +1

- [x] Response to the reporter's solution +
- [x] Shows the strong and weak points of the report +
- [ ] Finds shortcomings or errors in the report
- [x] Relevance of the questions +
- [x] Contribution to the discussion +

Final Grade: Opponent 7

Rev.: Georgia — Giorgi Tsereteli — 5

Physics ±3 +1

- [x] Correct and relevant physics +
- [x] Scientific approach +
- [x] Validity of conclusions +
- [ ] Accurate answers

Presentation ±1 0

- [x] Clear and understandable +
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 0

- [ ] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed +
- [x] Relevance of questions to both the reporter and the opponent +
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 3 Problem no.: 13

Juror: X. VXTERLAUS Signature: X. Vanlaer.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia. 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Brasil. 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Georgia 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: _____ Problem no.: Rotation 4 B

Juror: W. Meevasana Signature: W M.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Aer **5**

w add no kinetic energy → −0.5 **−0.5**

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 **−**

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 **−0.5**

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **4**

Opp.: Brazil **5**

Physics ±3 **0.5**

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 **0.5**

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: Ge **5**

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 **0.5**

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 **0.5**

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **6**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 3 Problem no.: 13

Juror: Jakob Lavrid Signature: Jakob Lavrid

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3: -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1: 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: 5

Physics ±3: +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1: +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: 5

Physics ±3: 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1: 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 2 Problem no.: 14

Juror: SMARTIN Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: GE — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach good parameters.
- [x] Validity of conclusions ± stated.
- [x] Accurate answers plenty of graph points

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — +1

- [x] Quality of experimental technique(s)
- [x] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions Power law could be anything
- [x] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter — 7

Opp.: AU — 5

Physics ±3 — +1

- [x] Correct and relevant physics (reversibility X)
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Opponent ±1 — +1

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 8

Rev.: BR — 5

Physics ±3 — ±

- [x] Correct and relevant physics
- [x] Scientific approach clarifications only.
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reviewer ±1 — ±

- [x] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer — 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 1 Problem no.: 7

Juror: S MARTIN Signature: SCM

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BR — 5

Physics ±3 — 0

- [0] Correct and relevant physics
- [0] Scientific approach
- [0] Validity of conclusions
- [0] Accurate answers

Presentation ±1 — 0

- [0] Clear and understandable
- [0] Appropriate manner
- [0] Overall impression

Reporter ±1 — −1

- [−1] Quality of experimental technique(s)
- [0] Structure
- [0] Explanation of formulae and symbols
- [0] Appropriate models, conformity of dimensions
- [0] Slides, on-site experiments, audio, video, as appropriate
- [0] References, proper citations of ideas and input of others
- [0] Novelty of the report
- [+1] Contribution to the discussion

Final Grade: Reporter: 4

Opp.: GE — 5

Physics ±3 — −1

- [0] Correct and relevant physics
- [0] Scientific approach
- [0] Validity of conclusions
- [0] Accurate answers

Presentation ±1 — −1

- [−1] Clear and understandable
- [0] Appropriate manner
- [0] Overall impression

Opponent ±1 — −1

- [−1] Response to the reporter's solution
- [0] Shows the strong and weak points of the report
- [0] Finds shortcomings or errors in the report
- [0] Relevance of the questions
- [0] Contribution to the discussion

Final Grade: Opponent: 2

Rev.: AU — 5

Physics ±3 — +1

- [✓] Correct and relevant physics
- [✓] Scientific approach
- [0] Validity of conclusions
- [0] Accurate answers

Presentation ±1 — +1

- [✓] Clear and understandable
- [✓] Appropriate manner
- [✓] Overall impression

Reviewer ±1 — +1

- [✓] Provides a thorough review of report and discussion
- [✓] Expresses own opinion about topics presented or discussed
- [✓] Relevance of questions to both the reporter and the opponent
- [✓] Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer: 8

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): _____ Room: _____ Stage: _____ Problem no.: _____

Juror: _____ Signature: _____

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

Opp.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

Rev.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 3 Problem no.: 13

Juror: Max Chalfin Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter and opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 +1

- ✓+ ☐ Correct and relevant physics
- ✓ ☐ Scientific approach
- ✓ ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- – ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ✓ ☐ Clear and understandable
- ✓ ☐ Appropriate manner
- ✓ ☐ Overall impression

Opponent ±1 +1

- +✓ ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- +✓ ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: F Stage: 2 Problem no.: 14

Juror: Max Chalfin Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- + ☐ Quality of experimental technique(s)
- ☐ Structure
- − ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: 5

Physics ±3 +1

- + ☐ Correct and relevant physics
- − ☐ Scientific approach +1/2
- − ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 +1

- ☐ Clear and understandable
- ☐ Appropriate manner +1/-1
- ☐ Overall impression

Opponent ±1 -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1/2 Room: F Stage: 1 Problem no.: 7

Juror: MaxChalfin Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 [4]

- + ☐ Correct and relevant physics
- ~ ☐ Scientific approach
- + ☐ Validity of conclusions
- − ☐ Accurate answers

Presentation ±1 [/]

- ~ ☐ Clear and understandable
- + ☐ Appropriate manner
- ~ ☐ Overall impression

Reporter ±1 [/]

- ~ ☐ Quality of experimental technique(s)
- ~ ☐ Structure
- + ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ~ ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- − ☐ Novelty of the report
- ~ ☐ Contribution to the discussion

Final Grade: Reporter [5]

Opp.: _____ 5

Physics ±3 [0]

- + ☐ Correct and relevant physics
- + ☐ Scientific approach
- ~ ☐ Validity of conclusions
- + ☐ Accurate answers

Presentation ±1 [0]

- ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Opponent ±1 [+1]

- + ☐ Response to the reporter's solution
- + ☐ Shows the strong and weak points of the report
- + ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent [6]

Rev.: _____ 5

Physics ±3 [ ]

- + ☐ Correct and relevant physics
- + ☐ Scientific approach
- + ☐ Validity of conclusions
- + ☐ Accurate answers

Presentation ±1 [+1]

- + ☐ Clear and understandable
- + ☐ Appropriate manner
- + ☐ Overall impression

Reviewer ±1 [+1]

- + ☐ Provides a thorough review of report and discussion
- + ☐ Expresses own opinion about topics presented or discussed
- ~ ☐ Relevance of questions to both the reporter and the opponent
- + ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer [7]

Round: ..1.. Room: ..F.. Fight Assistants: Ying Cui

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Brazil	Georgia	Australia	Georgia	Australia	Brazil	Australia	Brazil	Georgia			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Gavin Jennings	5	4	7	4	6	6	4	5	6			
Olga Inisheva	6	6	7	5	6	6	5	7	6			
Andreas Vaterlaus	6	5	7	4	6	7	5	7	7			
Worwat Meevasana	6	6	7	5	6	5	4	6	6			
Jakob Lavrod	5	3	7	2	5	5	3	8	5			
Acting Team Member	Lucas Levy	Luka Malashkhia	Jese Tong	Giorgi Tsirekidze	Alastair Butcher	Leonardo Gushike Yoshitake	Douglas Coulter	Giovani Ceotto	Giorgi Tsereteli			
Rejected Problems												
Accepted Problem	7			14			13					

Signature Fight Assistant: Ying Cui Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 1 Problem no.: _____

Juror: S. Byland Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -½

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -½

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ⊟ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Austria — 5

Physics ±3 — +2

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☒ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ⊟ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: New Zealand — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☒ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 1 Problem no.: 16

Juror: LARS GISLÉN Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AE — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reporter ±1 — −1

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Paul Worm AT — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: NZ — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 1 Problem no.: 16

Juror: STANISLAV PANOŠ Signature: Pan-S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -2,5

- ☐ Correct and relevant physics
- ⊟ Scientific approach
- ? ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ⊞ Clear and understandable
- ⊞ Appropriate manner
- ⊟ Overall impression

Reporter ±1 — -1

- ? ☐ Quality of experimental technique(s) – NO exp. data – NO RESULTS
- ⊞ Structure
- ⊟ Explanation of formulae and symbols
- ⊟ Appropriate models, conformity of dimensions
- ⊟ Slides, on-site experiments, audio, video, as appropriate
- ⊟ References, proper citations of ideas and input of others/NO ref.!
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Austria — 5

Physics ±3 — +1

- ⊞ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ⊞ Clear and understandable
- ⊞ Appropriate manner
- ⊞ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ⊞ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ⊞ Relevance of the questions
- ☐ Contribution to the discussion
- ⊟ shows his results and discussion focused on this his work

Final Grade: Opponent — 7

Rev.: NEW Z. — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ⊞ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ⊞ Clear and understandable
- ⊞ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ⊞ Expresses own opinion about topics presented or discussed
- ⊞ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 1 Problem no.: 16

Juror: G.LASKHISHVILI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAR — 5

Physics ±3

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter: 9

Opp.: AUST — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent: 5

Rev.: NZ — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer: 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 6 Room: 6 Stage: 1 Problem no.: _____

Juror: Lobyshev Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AE — 5

Physics ±3 — -2

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 1

Opp.: Austzic — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: NZ — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 2 Problem no.: 5

Juror: S. Byland Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Austria — 5

Physics ±3 — −½

+/− ☐ Correct and relevant physics
☑ Scientific approach
☑ Validity of conclusions
☐ Accurate answers

Presentation ±1 — +½

☐ Clear and understandable
☐ Appropriate manner
☐ Overall impression

Reporter ±1 — +½

☑ Quality of experimental technique(s)
☐ Structure
☑ Explanation of formulae and symbols
☑ Appropriate models, conformity of dimensions
⊞ Slides, on-site experiments, audio, video, as appropriate
☑ References, proper citations of ideas and input of others
☐ Novelty of the report
☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: New Zealand — 5

Physics ±3 — +½

☑ Correct and relevant physics
☐ Scientific approach
☐ Validity of conclusions
☐ Accurate answers

Presentation ±1 — 0

☐ Clear and understandable
☐ Appropriate manner
☐ Overall impression

Opponent ±1 — −½

☑ Response to the reporter's solution
☑ Shows the strong and weak points of the report
⊟ Finds shortcomings or errors in the report
☑ Relevance of the questions
☑ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: UAE — 5

Physics ±3 — 0

☐ Correct and relevant physics
☐ Scientific approach
☐ Validity of conclusions
☐ Accurate answers

Presentation ±1 — 0

☑ Clear and understandable
☑ Appropriate manner
☐ Overall impression

Reviewer ±1 — 0

☑ Provides a thorough review of report and discussion
☑ Expresses own opinion about topics presented or discussed
⊟ Relevance of questions to both the reporter and the opponent
☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: 9 Stage: 2 Problem no.: 5

Juror: Lars Gislgo Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: A.T [illegible] — 5

Physics ±3 — 0.5

- [+] Correct and relevant physics
- [+] Scientific approach
- [+] Validity of conclusions
- [-] Accurate answers

Presentation ±1 — 0.5

- [+] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 1

- [+] Quality of experimental technique(s)
- [ ] Structure
- [+] Explanation of formulae and symbols
- [+] Appropriate models, conformity of dimensions
- [+] Slides, on-site experiments, audio, video, as appropriate
- [+] References, proper citations of ideas and input of others
- [-] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 7

Opp.: NZ — 5

Physics ±3 — 1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 1

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 8

Rev.: AE — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 2 Problem no.: 5

Juror: STANISLAV PANOŠ Signature: Pano

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AUSTRIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ? ☐ Quality of experimental technique(s) – not described
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ⊟ References, proper citations of ideas and input of others / no ref.!
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: NEW Zealand — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: UAE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ⊟ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ⊟ Overall impression
- ⊟ structure

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 2 Problem no.: 5

Juror: G.LASKHISHVILI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AUS — 5

Physics ±3

- [x] Correct and relevant physics
- [ ] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter **7**

Opp.: NZ — 5

Physics ±3

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent **7**

Rev.: UAR — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **5**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 2 Problem no.: ____

Juror: Lobyshev Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 +2

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 3 Problem no.: 5

Juror: S. Byland Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: New Zealand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +½

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: UAE — 5

Physics ±3 — −½

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — −½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Austria — 5

Physics ±3 — +½

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression (time management)

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 1 Room: 4 Stage: 3 Problem no.: 2

Juror: Lars Gislén Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NZ — 5

Physics ±3 — 0.5

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0.5

- [x] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Reporter ±1 — 1

- [x] Quality of experimental technique(s)
- [x] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 7

Opp.: AE — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Opponent ±1 — 0

- [ ] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: AT — 5

Physics ±3 — 0.5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 3 Problem no.: 2

Juror: STANISLAV PAMOŠ Signature: Pam-S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NEW ZEALAND — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: UAE — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Opponent ±1 -1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☒ Contribution to the discussion

PASIVE !

Final Grade: Opponent **3**

Rev.: AUSTRIA — 5

Physics ±3 +1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression
- ☒ SMALL TEXT, TIME

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 3 Problem no.: _____

Juror: G.LASKHISHVILI Signature: _____

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 [ ]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 [ ]

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter [7]

Opp.: _____ 5

Physics ±3 [ ]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 [ ]

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent [3]

Rev.: _____ 5

Physics ±3 [ ]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 [ ]

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer [7]

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 3 Problem no.: 6

Juror: Lobyshev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NZ — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: AE — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: Austria — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 1 Problem no.: 16

Juror: Pashko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AE — 5

Physics ±3 — −2

- ☐ Correct and relevant physics
- ☑ Scientific approach —
- ☑ Validity of conclusions —
- ☐ Accurate answers

Presentation ±1 — [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☑ Quality of experimental technique(s) —
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others —
- ☑ Novelty of the report —
- ☐ Contribution to the discussion

Final Grade: Reporter **2**

Opp.: AT — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☑ Scientific approach +
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression +

Opponent ±1 — [ ]

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: NZ — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **8**

Revised after IOC feedback and approved by EC on 2011-11-03

(16) 4, 2, 12, 15, 7
5, 14, 2, 11
10, 12, 8

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 1 Problem no.: 10, 12, 8

Juror: Maslechko Anastasia Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Kaenn Kamne (UAE) — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Paul Worn (Austria) — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Francheska (New Zealand) — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: 6 Stage: 2 Problem no.: 5

Juror: Pashko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AT — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: NZ — 5

Physics ±3 1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 8

Rev.: AE — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 2 Problem no.: 12(5)

Juror: Maslenko Anastasiya Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Paul Worm (Austria) — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Scott Liu (New Zealand) — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Ibrahim Adams (UAE) — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 3 Problem no.: 2

Juror: Maslechko Anastasiya Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Jovan Jin (New Zealand) — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **8**

Opp.: Vishal Egbert (UAE) — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **4**

Rev.: Rebecca Frank (Austria) — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: G Stage: 3 Problem no.: 2

Juror: Pashko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NZ — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: AE — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: AT — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 —

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Round: ..1.. Room: ..6.. Fight Assistants: .....

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	UAE	Austria	New Zealand	Austria	New Zealand	UAE	New Zealand	UAE	Austria			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Samuel Byland	2	8	7	6	5	5	6	4	7			
Lars Cisko	2	7	7	7	8	5	7	5	7			
Stanislav Panos	2	7	7	7	8	5	7	3	7			
George Lashkhi	2	5	5	7	7	5	7	3	7			
Valentin Lobyshev	1	5	5	6	8	5	7	4	7			
Acting Team Member	Kaoom Kumar	Paul Worm	Fran Templer	Paul Worm	Scott Liu	W Lloyd Adams	Ivan Jin	Vishal Zgbert	Rebecca Frank			
Rejected Problems	10 17 8 14 2 11 5 12 15 7 9 4 3 ~~8~~ 13 1 ~~*~~ 6			12			~~X~~					
Accepted Problem	16			5			2					

Signature Fight Assistant: Di Xia ..... Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 1 Problem no.: 12

Juror: Kyn Martchenko Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao **5**

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Slovakia **5**

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Croatia **5**

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 1 Problem no.: 12

Juror: Kerry Parker Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (of ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macau. — 5

Physics ±3 -1

- ☒ Correct and relevant physics
- ☑ Scientific approach
- ☒ Validity of conclusions
- ? ☐ Accurate answers

Presentation ±1 -0.5

- ? ☐ Clear and understandable
- ✓ ☐ Appropriate manner
- ? ☐ Overall impression

Reporter ±1 -0.5

- ? ☐ Quality of experimental technique(s)
- ? ☐ Structure
- ☒ ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: ~~Croatia~~ Slovakia — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Domagoj Pluščec — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H. Stage: 1st. Problem no.: 12

Juror: Yung-Yuan Hsu. Signature: Yung-Yuan Hsu

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −0.3

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Slovakia — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.7

- ☐ Response to the reporter's solution X
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Croatia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 1 Problem no.: 12

Juror: YF YEO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Slovakia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1/2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Croatia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 1 Problem no.: 12

Juror: Timoshchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macau — 5

Physics ±3 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Slovakia — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Croatia — 5

Physics ±3 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 2/3 Problem no.: 9

Juror: Olga Marchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Croatia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Macao — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: 4 Stage: 2 Problem no.: 9

Juror: Kerry Packer Signature: Ken Fok.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia.

5

Physics ±3 −0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Croatia.

5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Macau.

5

Physics ±3 −0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 −0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 2 Problem no.: 9

Juror: Yung-Yuan Hsu Signature: Yung-Yuan Hsu

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — +0.

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — ~~+0.5~~ +0.3

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5.3

Opp.: Croatia — 5

Physics ±3 — +1.0

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Macao — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 2 Problem no.: 9

Juror: YF YFO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Croatia — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Macao — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 2 Problem no.: 9

Juror: Timoshchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Croatia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Macau — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: 4 Stage: 3 Problem no.: 16

Juror: Olga Marchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Macao — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Slovakia — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 3 Problem no.: 16

Juror: Kerry Parker Signature: Ker P.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ~~+0.5~~

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: ~~Slovakia~~ Macau. — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: Slovakia. — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 3 Problem no.: 16

Juror: Yung-Yuan Hsu. Signature: Yung-Yuan Hsu.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — ~~0~~ +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Macao — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable Not so
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

discussion is ~~jump~~ jumpy

Final Grade: Opponent — 5

Rev.: Slovakia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 3 Problem no.: 16

Juror: Yt Yto Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Macao — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: ~~Croatia~~ Slovakia — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H1 Stage: 3 Problem no.: 16

Juror: Timoshchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Macao — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Slovakia — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: Z Problem no.: 9

Juror: HUGO MARQUES Signature: Hugo Marques

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Croatia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Macao — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 2 Problem no.: 9

Juror: SUE NAPIER Signature: SNapier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols (units: weight in kg)
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others (none)
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Croatia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0 ~~-1~~ 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Macau — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 1st Problem no.: 12

Juror: HUGO MARQUES Signature: Hugo Marques

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: MACAO — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: SLOVAKIA — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: CROATIA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Cold balloon.

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 1 Problem no.: 12

Juror: SUE NAPIER Signature: S Napier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macau — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Slovakia — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions Overlap
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Croatia. — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 2

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 3 Problem no.: 16

Juror: Hugo Marrodan Signature: Hugo Marrodan

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CROATIA — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: ~~SLOVAKIA~~ MACAO — 5

Physics ±3 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: SLOVAKIA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: H Stage: 3 Problem no.: 16

Juror: SUE NAPIER Signature: SNapier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Macau — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Slovakia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Round: ..I.. Room: ..H.. Fight Assistants: ~~Macao Slovakia Croatia~~ Song Jinghan

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Macao	Slovakia	Croatia	Slovakia	Croatia	Macao	Croatia	Macao	Slovakia			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Ilya Martchenko	4	8	6	7	6	6	8	5	7			
Kerry Parker	3	6	4	6	6	4	8	4	8			
Yung-Yuan Hsu	4	6	5	5	7	5	7	5	7			
Ye Yao	4	7	4	6	6	5	6	4	9			
Igor Timoshchenko	4	6	4	5	7	5	6	4	9			
Acting Team Member	Xie Jingyi	Jakub Chudík	Domagoj Pluščec	Mário Lipovský	Vasilije Perović	Alexandra Santos	Domagoj Pluščec	HERMAN LAI	Matej Badin			
Rejected Problems												
Accepted Problem	12. Cold balloon			9. Water bombs			16. Magnetic brakes					

Signature Fight Assistant: Song Jinghan Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 1 Problem no.: 15

Juror: A ALLINSON Signature: OIL STARS.

Reject 17, 3.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Reasonable attempt

Physics ±3 −½

- ☐ Correct and relevant physics (lacks clear explan) −1
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +½

- ☐ Clear and understandable
- ☐ Appropriate manner ✓
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure ✓
- ☐ Explanation of formulae and symbols —
- ☐ Appropriate models, conformity of dimensions ✓
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others ✓
- ☐ Novelty of the report
- ☐ Contribution to the discussion ✓

Final Grade: Reporter 5

Opp.: _____ 5

Physics ±3 +1

- ☐ Correct and relevant physics ✓ +
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −½

- ☐ Clear and understandable
- ☐ Appropriate manner // — TIME NOT DISCUSS
- ☐ Overall impression

Opponent ±1 —

- ☐ Response to the reporter's solution −½
- ☐ Shows the strong and weak points of the report ½
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers ✓

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 1 Problem no.: 15

Juror: Qian Sun Signature: Qian Sun

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: _____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: ____ Problem no.: 15

Juror: A. NADOLNY Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: _____ 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: _____ 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +½

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 1 Problem no.: _____

Juror: M KUNESCH Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Switzerland — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Belarus — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 1 Problem no.: 15

Juror: DAGMAR PANOŠOVÁ Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ru — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: SW — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Be — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 2 Problem no.: 8

Juror: ALAN ALLINSON Signature: AAllinson

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland Suenja — 5

Physics ±3 —

- ☐ Correct and relevant physics -½
- ☐ Scientific approach ✓
- ☐ Validity of conclusions ?
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner ✓
- ☐ Overall impression ✓ video

Reporter ±1 -1/2

- ☐ Quality of experimental technique(s) ✓
- ☐ Structure ✓
- ☐ Explanation of formulae and symbols ✓
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others ✓
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Belarus Anastasiya — 5

Physics ±3 +1

- ☐ Correct and relevant physics ✓
- ☐ Scientific approach ✓
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression ✓

Opponent ±1 —

- ☐ Response to the reporter's solution ✓ good as expected
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report ✓
- ☐ Relevance of the questions ✓
- ☐ Contribution to the discussion ✓

Final Grade: Opponent 7

Rev.: Russia Matumi — 5

Physics ±3 +1

- ☐ Correct and relevant physics ✓
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers ✓

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion ✓
- ☐ Expresses own opinion about topics presented or discussed ✓
- ☐ Relevance of questions to both the reporter and the opponent ✓
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 2 Problem no.: 8

Juror: Qian Sun Signature: Qian Sun

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 2 Problem no.: 8

Juror: A. NADOLNY Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 +1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 2 Problem no.: 8

Juror: M KUNESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 — −1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Belarus — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Russia — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 2. Problem no.: 8

Juror: DAGMAR PANOŠOVÁ Signature: Panošová

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sw — 5

Physics ±3 — 0

- [±] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0,5

- [−] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — +0,5

- [✓] Quality of experimental technique(s)
- [✓] Structure
- [−] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [+] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Be — 5

Physics ±3 — 0

- [✓] Correct and relevant physics
- [−] Scientific approach
- [ ] Validity of conclusions
- [−] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [ ] Response to the reporter's solution
- [±] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [±] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Rw — 5

Physics ±3 — +0,5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [✓] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [✓] Clear and understandable
- [ ] Appropriate manner
- [✓] Overall impression

Reviewer ±1 — +0,5

- [✓] Provides a thorough review of report and discussion
- [✓] Expresses own opinion about topics presented or discussed
- [−] Relevance of questions to both the reporter and the opponent
- [✓] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 3 Problem no.: 16

Juror: A ALLINSON Signature: Alan Allinson

4 Reject #6 Mag Brakes ✓

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Daniil Maevets (Belarus) — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach (to this assumption)
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -½

- ☐ Clear and understandable
- ☐ Appropriate manner (Too quick to check maths)
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s) ½
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Mikhail Lupatkin (Russia) — 5

Physics ±3

- ☐ Correct and relevant physics -½
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — ½

- ☐ Clear and understandable
- ☐ Appropriate manner ½
- ☐ Overall impression

Opponent ±1 — ½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Lioba Heimbach (Switzerland) — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +½

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 3 Problem no.: 16

Juror: Qian Sun Signature: Qian Sun

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: ____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: ____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 3 Problem no.: 16

Juror: A. NADOLNY Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 1½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: 5

Physics ±3 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 3 Problem no.: 16

Juror: M KUNESCH Signature: _____

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Russia — 5

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Switzerland — 5

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I. Stage: 3 Problem no.: 16

Juror: DAGMAR PANOŠOVÁ Signature: Panošová

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Be — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0,25

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Rw — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Sw — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **6**

Revised after IOC feedback and approved by EC on 2011-11-03

4. reject

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 3 Problem no.: 16

Juror: MATEV Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 — 1,5

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Reporter ±1 — 1

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Russia — 5

Physics ±3 — -0,5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Switzerland — 5

Physics ±3 — 2

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0,5

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 3 Problem no.: 16

Juror: R M TOCKNELL Signature: R M Tockell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Russia — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Switzerland — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 2 Problem no.: 8

Juror: MATEV Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 1,5

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 0,5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 +0,5

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 2 Problem no.: 8

Juror: R M TOCKWELL Signature: R M Tockwell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter and opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — +1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Belarus — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Russia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 1 Problem no.: 15

Juror: RM TOCKNELL Signature: RM Tocknell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Switzerland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Belarus — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 1 Problem no.: _____

Juror: MATEV Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Switzerland — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics ~
- ☐ Scientific approach ~
- ☐ Validity of conclusions ?
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report ~
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: Belarus — 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **8**

Revised after IOC feedback and approved by EC on 2011-11-03

FINAL Round 1 FR 1 Fight Assistants: 古寄智 Ruizhi Zuo

	Stage 1			Stage 2			Stage 3		
Team	Russia	Switzerland	Belarus	Switzerland	Belarus	Russia	Belarus	Russia	Switzerland
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Alan Allinson	5	6	7	5	7	8	6	6	7
Qian Sun	5	6	8	7	7	8	7	7	7
Andrzej Nadolny	7	8	8	6	5	6	7	6	7
Markus Kuresch	5	7	6	5	5	7	7	6	6
Dagmar Panosova	5	6	6	5	5	6	7	7	6
Acting Team Member	Mikhail Luptakov	Lioba Heimbach	Victor Loiko	Svenja Ruth	Anastasiya Kozlova	Vitalii Matinnin	Daniil Mnevets	Mikhail Luptakov	Lioba Heimbach
Chosen Problem	15.			8			16		

Reject 17. 3. 5. 4.

Signature Fight Assistant:..... Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 1 Room: J Stage: 1 Problem no.: 2

Juror: Kim F. Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Poland — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Romania — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: 7 Stage: _____ Problem no.: _____

Juror: HÖMÖSTREI, MIHÁLY Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Roland — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Romania — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: 1 Stage: 1 Problem no.: 2

Juror: Anyke Signature: Anyke

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — -1

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Poland — 5

Physics ±3 — +2

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Opponent ±1 — 0

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Romania — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reviewer ±1 — 0

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: 5 Stage: 1 Problem no.: #2

Juror: M. H. Kwon Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK Lucy — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Poland Kadat — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Romania Andreea — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): I Room: J Stage: 1 Problem no.: 2

Juror: OSTERMAIER Signature: F. Ostermaier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,25

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **5**

Opp.: Poland — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Romania — 5

Physics ±3 -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **4**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: J Stage: 2 Problem no.: 15

Juror: Kim F Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Romania — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: UK — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: 7 Stage: 2 Problem no.: 15

Juror: MIHALY HÖMÖSTREI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: POLAND — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: ROMANIA — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: UK — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: J Stage: 2 Problem no.: 15

Juror: Gayke Signature: Gayke

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Roland — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 0

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☒ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter 7.

Opp.: Romantic — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 6.

Rev.: UK — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 -1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: J Stage: 2 Problem no.: 15

Juror: Min. Kwon Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: P Mara — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: R Fudor — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: B Lapan — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): I Room: 7 Stage: 2 Problem no.: 15

Juror: OSTERMANN Signature: F. Ostermann

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,25

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Romania — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: UK — 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: J Stage: 3 Problem no.: 4

Juror: Kim F Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 2

Opp.: UK — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: Poland — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: 7 Stage: 3 Problem no.: 4

Juror: MIHÁLY HÖKÖSMEGI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: UK — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Poland — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: J Stage: 3 Problem no.: 4

Juror: Ayke Signature: Ayke

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role.***
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points.***
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points.***
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 — -2

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — -1

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 3

Opp.: UK — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Opponent ±1 — 0

- [x] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: poland. — 5

Physics ±3 — +2

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reviewer ±1 — 0

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: J Stage: 3 Problem no.: 4

Juror: M. H. Kwon Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: K Tudor — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: QB Lopan — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: P Ran — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): I Room: 7 Stage: 3 Problem no.: 4

Juror: OSTERMAIER Signature: F. Oster

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 -1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **3**

Opp.: UK — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0,75

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **8**

Rev.: Poland — 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: J Stage: 3 Problem no.: 4

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Tudor Ciobanu — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Ilya Lapan — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Rad Twaszykiewicz — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: J Stage: 3 Problem no.: 4

Juror: Sze Guan Kheng Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 — -3

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 2

Opp.: United Kingdom — 5

Physics ±3 — 1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 1

- [x] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Poland — 5

Physics ±3 — 2

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: J Stage: 2 Problem no.: 15

Juror: Sze Guan Khang Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 — +2

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 —

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Romania — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: United Kingdom — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 —

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: J Stage: 2 Problem no.: 15

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Timoteusz Miaga — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Tudor Ciobanu — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Ilya Lapan — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: I Stage: 1 Problem no.: 2

Juror: Sze Guan Khoo Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: United Kingdom — 5

Physics ±3 — −3

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Reporter ±1 — −1

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Poland — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [ ] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Romania — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: J Stage: 1 Problem no.: 2

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Lucy Thomas — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Radost Wastkiewicz — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Andreea Oncescu — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

FINAL Fight Assistants: 杨鹏宇 Pengyu Yang

	Stage 1			Stage 2			Stage 3		
Team	UK	PL	RO	PL	RO	GB	RO	GB	PL
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Kim Freimann	3	6	3	7	6	5	2	4	7
Mihály Hömöstrei	6	7	4	8	8	7	3	7	8
Qing Ye	5	7	6	7	6	6	3	6	8
Myeung Hoi kwon	5	7	6	7	7	6	3	6	6
Florian ostermaier	5	7	4	6	6	6	3	8	7
Guan Kheng Sze									
Dmitrii Agarkov									
Acting Team Member	Lucy	RADOST WASZKIEWICZ	ANDREEA OACESCU	Tymoteusz Miara	TUDOR CIOBANU	Ilya Lapan	TUDOR CIOBANU	Ilya Lapan	RADOST WASZKIEWICZ
Chosen Problem	2			15			4		

rej: 9

Signature Fight Assistant:..... Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 1 Problem no.: 7

Juror: REAGER Signature: Reag

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia (Jun Tong)

5

Physics ±3 -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Singapore (Jaed Tan)

5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Nigeria

5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 1 Problem no.: 7

Juror: RM TOCKNELL Signature: RM Tocknell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Singapore — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Nigeria — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 1 Problem no.: 7

Juror: SUE NAPIER Signature: SN

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — Jesse Tong

5

Physics ±3 +0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Singapore — Joel Tan

5

Physics ±3 +2

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 9

Rev.: Nigeria — Mustapha Aminu

5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 1 Problem no.: 7

Juror: HSIEN-CHUNG KAO Signature: Hsien-chung Kao

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 — 0.8

- ☐ Correct and relevant physics
- ☐ Scientific approach
- + ☐ Validity of conclusions
- − ☐ Accurate answers

Presentation ±1 — +0.3

- + ☐ Clear and understandable
- ☐ Appropriate manner
- − ☐ Overall impression

Reporter ±1 — +0.3

- − ☐ Quality of experimental technique(s)
- + ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- + ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Singapore — 5

Physics ±3 — +1.2

- + ☐ Correct and relevant physics
- + ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- + ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- + ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- + ☐ Relevance of the questions
- + ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Nigeria — 5

Physics ±3 — +0.6

- ☐ Correct and relevant physics
- ☐ Scientific approach
- + ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- + ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- + ☐ Relevance of questions to both the reporter and the opponent
- + ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 1 Problem no.: 7

Juror: ZENEI PÉTER Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AUSTRALIA — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: SINGAPURE — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: NIGERIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 1 Problem no.: _____

Juror: G.LASKHISHVILI Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **4**

Opp.: Singapore — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Nigeria — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 —

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **6**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 2 Problem no.: 10

Juror: Reaver Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore Tou Yan Chan — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 9

Opp.: ~~Czech Rep.~~ Nigeria Habeeb Sarusi — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 3

Rev.: Czech Rep Daniel Szerba — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 2 Problem no.: 10

Juror: RM TOCKNELL Signature: RM Tocknell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Reporter ±1 — +1

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Nigeria — 5

Physics ±3 — -2

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [ ] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 3

Rev.: Czech Rep. — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [x] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 2 Problem no.: 10

Juror: SUE NAPIER Signature: SNapier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore Tan Yan Quan — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7/8

Opp.: Nigeria Habeeb Sanusi — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Czech Republic Daniel — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 2 Problem no.: 10

Juror: H. C. KAO Signature: Hsien-chung Kao

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 — 2

- + ☐ Correct and relevant physics
- + ☐ Scientific approach
- ☐ Validity of conclusions
- + ☐ Accurate answers

Presentation ±1 — +0.4

- + ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Reporter ±1 — +0.8

- + ☐ Quality of experimental technique(s)
- + ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- + ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- + ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Nigeria — 5

Physics ±3 — -0.4

- - ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- - ☐ Accurate answers

Presentation ±1 — -0.2

- - ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.4

- - ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- - ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Czech Republic — 5

Physics ±3 — 0.2

- + ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.2

- ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Reviewer ±1 — 0.2

- + ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 2 Problem no.: 10

Juror: JENEI PÉTER Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SINGAPORE — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: NIGERIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: CZECH REP — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 2 Problem no.: 10

Juror: G. LASRHISHVILI Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 3 Problem no.: 2

Juror: Regner Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria Mustapha A Tukur — 5

Physics ±3 — -1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Czech Rep. Jan Mazac — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Australia Douglas Coulter — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 3 Problem no.: 2

Juror: RM TOLKNELL Signature: RM Tolknell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Czech Rep. — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Australia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 3 Problem no.: 2

Juror: SUE NAPIER Signature: SNapier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3.5

Opp.: Czech Republic / Jan Nazar — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Australia / Douglas Coulter — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 3 Problem no.: 2

Juror: H.C. KAO Signature: Hsien-chung Kao

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — -1.5

- — ☐ Correct and relevant physics
- ☐ Scientific approach
- — ☐ Validity of conclusions
- — ☐ Accurate answers

Presentation ±1 — -0.2

- ☐ Clear and understandable
- ☐ Appropriate manner
- — ☐ Overall impression

Reporter ±1 — -0.2

- + ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- — ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- — ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Czech Republic — 5

Physics ±3 — +1

- + ☐ Correct and relevant physics
- ☐ Scientific approach
- + ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- — ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Opponent ±1 — +0.2

- + ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Australia — 5

Physics ±3 — +1

- + ☐ Correct and relevant physics
- ☐ Scientific approach
- + ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.2

- ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Reviewer ±1 — +0.2

- + ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 3 Problem no.: 2

Juror: JENEI PÉTER Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NIGERIA — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: CZECH REP — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: AUSTRALIA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 3 Problem no.: 2

Juror: G.LASKHISHVILI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NIGERIA — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: CZECH — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: AUSTRALIA. — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 4 Problem no.: 8

Juror: REGNER Signature: Regner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Rep. Dalibor Repcek — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Australia Swagouni Somasdhuna — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Singapore Joel Tan — 5

Physics ±3 — +2,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 4 Problem no.: 8

Juror: R M TOCKNELL Signature: RMTockell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Rep. — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Australia — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Singapore — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 4 Problem no.: 8

Juror: SUE NAPIER Signature: SNapier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Republic — 5

Physics ±3 Dalibor — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Austria Slavomi — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Singapore Joel Tan — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 4 Problem no.: 8

Juror: H. C. KAO Signature: Hsien-chung Kao

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Republic — 5

Physics ±3 —

- + ☐ Correct and relevant physics
- ☐ Scientific approach
- − ☐ Validity of conclusions
- - ☐ Accurate answers

Presentation ±1 −0.3

- − ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.4

- + ☐ Quality of experimental technique(s)
- + ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- - ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Australia — 5

Physics ±3 −0.3

- + ☐ Correct and relevant physics
- ☐ Scientific approach
- − ☐ Validity of conclusions
- − ☐ Accurate answers

Presentation ±1 +0.5

- + ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Opponent ±1 +0.5

- + ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- + ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Singapore — 5

Physics ±3 +2

- + ☐ Correct and relevant physics
- ☐ Scientific approach
- + ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- + ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Reviewer ±1 +0.4

- + ☐ Provides a thorough review of report and discussion
- + ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 4 Problem no.: 9

Juror: JENEI PETER Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CZECH REP — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: AUSTRALIA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: SINGAPURE — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 4 Problem no.: 8

Juror: G.LASKHISHVILI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CZECH — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: AUSTRAL — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Singapore — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 2 Room: A Fight Assistants: Zixi Jia

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Australia	Singapore	Nigeria	Singapore	Nigeria	Czech Republic	Nigeria	Czech Republic	Australia	Czech Republic	Australia	Singapore
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Ulrike Regner	4	8	6	9	3	6	2	7	7	4	4	8
Mark Tocknell	6	8	3	8	3	7	2	7	5	6	6	8
Susan Napier	6	8	6	8	5	6	3	5	5	5	6	8
Hsien - Chung Kao	6	7	7	8	4	6	3	6	6	5	6	8
Peter Jenei	4	7	5	6	5	5	2	8	6	4	6	7
George Laskhishvili	4	7	6	7	5	5	3	8	7	5	6	8
Acting Team Member	Jesse Tong	Joel Tan	Mustapha Aminu	Tan Yan Quan	Habeeb Sanusi	Daniel Štěrba	Mustapha Aminu Tukuro	Jan Mazáč	Douglas Coulter	Dalibor Repcek	Sivagowri Sornasundaram	Joel Tan
Rejected Problems	1			8. 12.			X			X		
Accepted Problem	7			10			2			8		

Signature Fight Assistant: Zixi Jia Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 2 Room: C Stage: 3 Problem no.: 2

Juror: PLESCH Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,3

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: C Stage: 3 Problem no.: 2

Juror: TATYANA G.S. Signature: Tatyana G.S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ϕ

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Thailand — 5

Physics ±3 ϕ

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ϕ

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 ϕ

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Austria — 5

Physics ±3 -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ϕ

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Scoring Guidelines

Fight (Round no.): 2 Room: C Stage: 3 Problem no.: 2

Juror: Yung-Yuan Hsu Signature: Yung-Yuan Hsu

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 — -2.

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.3

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1.

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4.

Opp.: Thailand — 5

Physics ±3 — +1.

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7.

Rev.: Austria — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: C Stage: 3 Problem no.: 2

Juror: SMARTIN Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ru — 5

Physics ±3 +½

- ☑ Correct and relevant physics (qualitative + simulation)
- ☑ Scientific approach
- ☑ Validity of conclusions demonstrated
- ☑ Accurate answers within sensible limits

Presentation ±1 +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 +½

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, ~~conformity of dimensions~~ (very good)
- ☑ ~~Slides~~, on-site experiments, ~~audio~~, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter: 6

Opp.: Th — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −½

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Opponent ±1 −½

- ☐ Response to the reporter's solution (attach)
- ☐ Shows the strong and weak points of the report a bit
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent: 4

Rev.: At — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 +½

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer: 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: C Stage: 3 Problem no.: _____

Juror: Maslechko a. Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Pavel Janko (Russia) — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: _____ (Thailand) — 5

Physics ±3 — ____

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — ____

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — ____

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Rebecca Frank (Austria) — 5

Physics ±3 — ____

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): II Room: C Stage: 3 Problem no.: 2

Juror: OSTERMAIER Signature: T. Ostermaier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,75

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **6**

Opp.: Thailand — 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Austria — 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): C Room: 2 Stage: 2 Problem no.: ____

Juror: Plesch Signature: ____

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ____ 5

Physics ±3 -1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: ____ 5

Physics ±3 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.8

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.8

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 9

Rev.: ____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.8

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0.8

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: C Stage: 2 Problem no.: 11

Juror: TATYANA G.S. Signature: Tatyana G.S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Austria — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — ~~+0,5~~ 0

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Russia — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Thailand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Scoring Guidelines

Fight (Round no.): 2 Room: C Stage: 2 Problem no.: 11

Juror: S MARTIN Signature: SMartin

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: At — 5

Physics ±3 — +½

- ☑ Correct and relevant physics — in discussion
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +½

- ☐ Quality of experimental technique(s) — No alternative
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Ru — 5

Physics ±3 — 0

- ☐ Correct and relevant physics — some not others
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −½

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Th — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +½

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer — 5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Revised after IOC feedback and approved by EC on 2011-11-03

11.

Scoring Guidelines

Fight (Round no.): 2. Room: C Stage: 2 Problem no.: 4

Juror: Yung-Yuan Hsu. Signature: Yung-Yuan Hsu.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Austria — 5

Physics ±3 — 0.

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Russia — 5

Physics ±3 — +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Thailand. — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: C Stage: 2 Problem no.: (11)

Juror: Maslechko A. Signature: _____

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Vanessa Majoric (Austria) — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Vitalii Matiunin (Russia) — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Aroonrerm Kittirattanachai (Thailand) — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☑ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): II Room: C Stage: 2 Problem no.: 11

Juror: OSTERMAIER Signature: F. Ostermaier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Austria — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Russia — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Thailand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0,25

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: C Stage: 1 Problem no.: 10

Juror: PLESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: 5

Physics ±3 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: C Stage: 1 Problem no.: 10

Juror: TATYANA G.S. Signature: Tatyana G.S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Austria — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Russia — 5

Physics ±3 +1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☒ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Scoring Guidelines

Fight (Round no.): 2. Room: C. Stage: 1 Problem no.: 10.

Juror: Yung-Yuan Hsu Signature: Yung-Yuan Hsu

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 — -1.

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols Not clear.
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate No.
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4.

Opp.: Austria. — 5

Physics ±3 — +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1.

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 8.

Rev.: Russia. — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): II Room: C Stage: 1 Problem no.: 10

Juror: OSTERMANN Signature: F. Ostermann

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Austria — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,75

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Russia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — #6

Scoring Guidelines

Fight (Round no.): 2 Room: C Stage: 1 Problem no.: 10

Juror: Maslechko a. Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Jaylor Yan (Thailand) — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **6**

Opp.: Rebecca Frank (Austria) — 5

Physics ±3 +2

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **8**

Rev.: Mikhail Juptakov (Russia) — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: C Stage: 1 Problem no.: 10

Juror: S MARTIN Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: TH — 5

Physics ±3 — +½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner neither fast.
- ☑ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols too fast.
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: At — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report some good some not.
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Ru — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 2 Room: C Fight Assistants:

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Thailand	Austria	Russia.	Austria.	Russia	Thailand	Russia.	Thailand.	Austria.			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Florian Ostermaier	4	7	6	6	7	4	6	7	7			
Anastasiia Maslechko	6	8	7	5	7	6	6	5	7			
Steve Martin	7	6	6	6	5	5	6	4	6			
Yung-Yuan Hsu	4	8	5	6	7	5	4	7	6			
Tatyana Goncalves	4	5	6	4	8	5	6	5	5			
Martin Plesch.	4	5	6	4	9	3	6	5	5			
Acting Team Member	Taylor Yan.	Rebecca Frank.	Mikhail Lup-takov.	Vanessa. Majnavic	Vidalis Matiunin	Aroorvem Krittnathachai.	Pavel Janho.	Parwin Toecheoyaen	Rebecca. Frank.			
Rejected Problems				4.								
Accepted Problem	10			11			2					

Signature Fight Assistant: Wang Jin. Double-checked with Scoring Guidelines by second Fight Assistant (signature):

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 1 Problem no.: 16

Juror: FRANCIS EKWEMTA Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Germany — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Georgia — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 12 Stage: 1 Problem no.: 16

Juror: PHIL O'NEILL Signature: Phil O'Neill

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ROMANIA — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: GERMANY — 5

Physics ±3 — ½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — ½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 7

Rev.: GEORGIA — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — 1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 1 Problem no.: 16

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 +0.5 → 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

back of physical explanation

Presentation ±1 0 → 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0.5 → -1 → -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: 5

Physics ±3 2 → 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 → 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.5 → 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: 5

Physics ±3 -1 → -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 → 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0 → 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 1 Problem no.: 16

Juror: Dmitrii Agarkov Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Havia Măguveanu — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Arne Mensel — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Giorgi Tsereteli — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 1 Problem no.: 16

Juror: YL YLO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Germany — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Georgia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 2 Problem no.: 16

Juror: Leszek Gladysz Signature: L. Gladysz

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 3 Problem no.: 10

Juror: PHIL O'NEILL Signature: PJO'Neill

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: GEORGIA — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −½

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — −½

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: ROMANIA — 5

Physics ±3

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — ½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — ½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: GEORGIA — 5

Physics ±3

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 3 Problem no.: 10

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 0 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.5 — -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Romania — 5

Physics ±3 0 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.5 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Germany — 5

Physics ±3 1 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 3 Problem no.: 10

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Luka Malashkhia, Georgia — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Tudor Ciobanu, Romania — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Germany — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 3 Problem no.: 10

Juror: Leszek Głodau Signature: L. Głodau

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent 6

Rev.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 3 Problem no.: 10

Juror: FRANCIS ECKERSLEY Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **4**

Opp.: Romania — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: Germany — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **5**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 3 Problem no.: 10

Juror: YL YLO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 — -½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -½

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Romania — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Germany — 5

Physics ±3 — +

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +½

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 0 Stage: 2 Problem no.: 13

Juror: PHIL O'NEILL Signature: PJO'Neill

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: GERMANY — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: GEORGIA — 5

Physics ±3

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☒ Overall impression

Opponent ±1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: ROMANIA — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 2 Problem no.: 13

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 2 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0.5 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Georgia — 5

Physics ±3 -1 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach — obsession with an actual analytical solution
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Romania — 5

Physics ±3 0 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 2 Problem no.: 13

Juror: Leszek Grodecki Signature: L. Grodecki

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter and opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany **5**

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Georgia **5**

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Romania **5**

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 2 Problem no.: 13

Juror: FRANCA BIANCHETTA Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Georgia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Romania — 5

Physics ±3 — +

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Scoring Guidelines

Fight (Round no.): 2 Room: D Stage: 2 Problem no.: 13

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: (Germany) 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 9

Opp.: Giorgi Bakhtadze 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Anca Goldis 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 2 Stage: 2 Problem no.: 13

Juror: YE YEO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Georgia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Romania — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 2 Room: D Fight Assistants: ZHENG YU

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Romania	Germany	Georgia	Germany	Georgia	Romania	Georgia	Romania	Germany			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Philip O'Neill	5	7	7	8	5	7	4	6	6			
David Kell	5	8	5	8	5	6	4	6	7			
Dmitrii Agarkov	6	8	5	9	6	6	4	6	~~6~~ 6			
Leszek Gladczuk	6	8	6	7	6	6	4	6	6			
Francis Ejike Ekwenta	5	7	5	8	6	8	4	6	6			
Ye Yeo	5	7	5	7	6	6	4	6	7			
Acting Team Member	Horia ~~Hatrin~~ Magureanu	Arne Hensel	Giorgi Tsereteli	Arne Hensel	Giorgi Bakhtadze	ANCA GOLDIS	Luka Malashkhia	TUDOR CIOBANU	Yonas Landgraf			
Rejected Problems							2. Hologram					
Accepted Problem	16. Magnetic brakes			13. Rotating saddle			10. Coefficient of diffusion					

Signature Fight Assistant: Zheng Yu Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: I Problem no.: 6

Juror: Kathryn Zeelard Signature: K Zeel

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ahn Cheon — 5

Physics ±3 — +2½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☐ Appropriate manner — too fast!!
- ☑ Overall impression

Reporter ±1 — +1.

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☒ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Excellent report, but mathematics was difficult to follow and would have been good to see breadth

Final Grade: Reporter — 9

Opp.: Ian — 5

Physics ±3 — −½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: _____ — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — −½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

misunderstood experimental setup.

Final Grade: Reviewer — 4

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 1 Problem no.: 6

Juror: E. Casali Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 — 3/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: United Kingdom — 5

Physics ±3 — 1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1/2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Macao — 5

Physics ±3 — 1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 1 Problem no.: 6

Juror: LARS GISLÉN Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 1

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0.5

- [x] Quality of experimental technique(s)
- [x] Structure
- [6] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 8

Opp.: UK — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 1 Problem no.: 6

Juror: KUBINEC Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: [illegible]

5

Physics ±3 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.:

5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.:

5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 1 Problem no.: 6

Juror: MATEV Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 — 2

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 1

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 1

- [x] Quality of experimental technique(s)
- [x] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 9

Opp.: United Kingdom — 5

Physics ±3 — 0.5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Opponent ±1 — 0.5

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Macao — 5

Physics ±3 — 1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Reviewer ±1 — 0.5

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 1 Problem no.: 6

Juror: O. Inisheva Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 +1

- ☑ Correct and relevant physics +
- ☑ Scientific approach +
- ☐ Validity of conclusions
- ☑ Accurate answers + computer simulation +

Presentation ±1 1

- ☑ Clear and understandable +
- ☑ Appropriate manner +
- ☑ Overall impression ±

Reporter ±1 +1

- ☐ Quality of experimental technique(s) −
- ☑ Structure +
- ☑ Explanation of formulae and symbols +
- ☑ Appropriate models, conformity of dimensions +
- ☑ Slides, on-site experiments, audio, video, as appropriate +
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion +

Final Grade: Reporter 8

Opp.: United Kingdom — 5

Physics ±3 +1

- ☑ Correct and relevant physics +
- ☑ Scientific approach +
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☑ Response to the reporter's solution +
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions +
- ☑ Contribution to the discussion +

Final Grade: Opponent 7

Rev.: Macao — 5

Physics ±3 +0,5

- ☑ Correct and relevant physics +
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☑ Clear and understandable +
- ☑ Appropriate manner ±
- ☐ Overall impression

Reviewer ±1 +0,5

- ☑ Provides a thorough review of report and discussion +
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent +

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 2 Problem no.: 7

Juror: Kathryn Zealand Signature: KZealand

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Dominic — 5

weak theory - no link to experiment, but clear understanding demonstrated

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

excellent narrative

Reporter ±1 — 0

- ☑ Quality of experimental technique(s) — role of specific heat not discussed / better control of variables would be good
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions — no link of equations to experiment
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: _____ — 5

needed to engage on "theory" more

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

valid points on experimental control

5.5

Final Grade: Opponent — 6

Rev.: Anthony — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +½

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent — great.
- ☑ Draws attention to points missed by the reporter or the opponent — yes, but not the most relevant points

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

e.g. what was the role of sand?

7.5

Final Grade: Reviewer — 8

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 2 Problem no.: 7

Juror: E. Casoli Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: United Kingdom — 5

Physics ±3: [ ]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1: [ ]

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter: 6

Opp.: Macao — 5

Physics ±3: 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1: 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent: 7

Rev.: Korea — 5

Physics ±3: 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1: 1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer: 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 2 Problem no.: 7

Juror: LARS GISLÉN Signature: Lars Gislén

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: WK — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Macau — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Corea — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 2 Problem no.: _____

Juror: KUBINEC Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: _____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: _____ 5

Physics ±3 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 2 Problem no.: 7

Juror: MATEV Signature: M Matev

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: United Kingdom — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Macau — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Korea — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 2 Problem no.: _____

Juror: O. Iwisheva Signature: _____

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: United Kingdom — 5

Physics ±3 +0.5

- ☑ Correct and relevant physics ±
- ☑ Scientific approach ±
- ☐ Validity of conclusions
- ☑ Accurate answers +

Presentation ±1 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☑ Structure +
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions +
- ☑ Slides, on-site experiments, audio, video, as appropriate +
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion +

Final Grade: Reporter **6**

Opp.: Macao — 5

Physics ±3 −1

- ☑ Correct and relevant physics −
- ☑ Scientific approach −
- ☑ Validity of conclusions −
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **4**

Rev.: Korea — 5

Physics ±3 +1

- ☑ Correct and relevant physics +
- ☑ Scientific approach +
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable +
- ☑ Appropriate manner +
- ☑ Overall impression +

Reviewer ±1 +1

- ☑ Provides a thorough review of report and discussion +
- ☑ Expresses own opinion about topics presented or discussed +
- ☑ Relevance of questions to both the reporter and the opponent +
- ☑ Draws attention to points missed by the reporter or the opponent +

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **8**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 3 Problem no.: 17

Juror: Kathryn Zealand Signature: KZealand

☺

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Cherry — 5

Physics ±3 -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **3**

Opp.: Hyan — 5

Physics ±3 +1½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -½

- ☑ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Be careful with being forceful and introducing own work

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☒ Contribution to the discussion

some excellent questions, but missed some basic understanding question.

Final Grade: Opponent **6**

Rev.: — 5

could be more thorough on hypothesis.

Physics ±3 +1½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 +½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

7.5 ↑.

Final Grade: Reviewer **8**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 3 Problem no.: 17

Juror: E. Casali Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Korea — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1/2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: United Kingdom — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 3 Problem no.: _____

Juror: Lars Gislén Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macau — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Korea — 5

Physics ±3 — 1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: UK — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 3 Problem no.: 17

Juror: KUBINEC Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Korea — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: UK — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 3 Problem no.: 17

Juror: MATEV Signature: MMatev

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Korea — 5

Physics ±3 — 2,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: United Kingdom — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 3 Problem no.: 17

Juror: O. Inisheva Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 −0,5

- ☐ Correct and relevant physics −
- ☐ Scientific approach −
- ☐ Validity of conclusions −
- ☐ Accurate answers −

Presentation ±1 0

- ☑ Clear and understandable +
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols −
- ☑ Appropriate models, conformity of dimensions −
- ☑ Slides, on-site experiments, audio, video, as appropriate −
- ☑ References, proper citations of ideas and input of others −
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **4**

Opp.: Korea — 5

Physics ±3 +2

- ☑ Correct and relevant physics +
- ☐ Scientific approach
- ☑ Validity of conclusions +
- ☑ Accurate answers +

Presentation ±1 +0,5

- ☑ Clear and understandable +
- ☑ Appropriate manner +
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report +
- ☐ Finds shortcomings or errors in the report −
- ☑ Relevance of the questions +
- ☑ Contribution to the discussion +

Final Grade: Opponent **8**

Rev.: United Kingdom — 5

Physics ±3 +0,5

- ☑ Correct and relevant physics ±
- ☐ Scientific approach
- ☑ Validity of conclusions +
- ☐ Accurate answers

Presentation ±1 +0,5

- ☑ Clear and understandable +
- ☐ Appropriate manner
- ☑ Overall impression +

Reviewer ±1 +1

- ☑ Provides a thorough review of report and discussion +
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent +
- ☑ Draws attention to points missed by the reporter or the opponent +

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 2 Room: E Fight Assistants: Fanglin Lin

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Korea	United Kingdom	Macao	United Kingdom	Macao	Korea	Macao	Korea	United Kingdom			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Katheryn Zealand	9	5	4	6	6	8	3	6	8			
Eduardo Casalli	7	6	6	6	7	8	3	6	7			
Lars Girken	8	6	6	7	5	8	4	6	5			
Pavol Kubinec	8	6	6	5	5	9	3	8	8			
Mladen Matev	9	6	7	6	4	7	4	7	7			
Olga Znisheva	8	7	7	6	4	8	4	8	7			
Acting Team Member	Ahn Cheong Eung.	Y Ian Heung.	Xie Jingyi	Dominic Deetson	Leong Lok Tong	Anthony Cho	Cherry Lao	Anthony Cho	Lucy Thomas			
Rejected Problems	1			X			14. 8. 15					
Accepted Problem	6			7			17					

Signature Fight Assistant: Fanglin Lin Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 1 Problem no.: 7

Juror: KUNDRATEC Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BELARUS — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: BULGARIA — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: HUNGARY — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 1 Problem no.: 7

Juror: Max Chalfin Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

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- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ____ 5

Physics ±3: 0

~ ☐ Correct and relevant physics
+ ☐ Scientific approach
+ ☐ Validity of conclusions
~ ☐ Accurate answers

Presentation ±1: +1

+ ☐ Clear and understandable
+ ☐ Appropriate manner
+ ☐ Overall impression

Reporter ±1: 0

~ ☐ Quality of experimental technique(s)
☐ Structure
☐ Explanation of formulae and symbols
☐ Appropriate models, conformity of dimensions
☐ Slides, on-site experiments, audio, video, as appropriate
☐ References, proper citations of ideas and input of others
☐ Novelty of the report
+ ☐ Contribution to the discussion

Final Grade: Reporter: 6

Opp.: ____ 5

Physics ±3: +1

+ ☐ Correct and relevant physics
~ ☐ Scientific approach
☐ Validity of conclusions
☐ Accurate answers

Presentation ±1: 0

☐ Clear and understandable
☐ Appropriate manner
☐ Overall impression

Opponent ±1: 0

☐ Response to the reporter's solution
~ ☐ Shows the strong and weak points of the report
~ ☐ Finds shortcomings or errors in the report
☐ Relevance of the questions
~ ☐ Contribution to the discussion

Final Grade: Opponent: 6

Rev.: ____ 5

Physics ±3: 0

~ ☐ Correct and relevant physics
☐ Scientific approach
– ☐ Validity of conclusions
– ☐ Accurate answers

Presentation ±1: 0

☐ Clear and understandable
☐ Appropriate manner
☐ Overall impression

Reviewer ±1: 0

+ ☐ Provides a thorough review of report and discussion
~ ☐ Expresses own opinion about topics presented or discussed
+ ☐ Relevance of questions to both the reporter and the opponent
– ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer: 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 1 Problem no.: 7

Juror: Kerry Parker Signature: Ker K

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus. Anton Silyek — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Bulgaria Nikolay Nikolov. — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Hungary Linh Pham Thi — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 ±0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 1 Problem no.: 7

Juror: Hugo MARRocho Signature: Hugo Marrocho

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — Anton — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Some nice experiments, still missing

Reporter ±1 — Some points — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Bulgaria — Nikolay — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Hungary — Lizi — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 1 Problem no.: 7

Juror: S. Byland Signature: By

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BEL — 5

Physics ±3 — −1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☒ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: BUL — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −½

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent ±1 — 0

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: HUN — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — −½

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 1 Problem no.: 7

Juror: Felicia Ulbted Signature: Felix Ulbted

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Bulgaria — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,5

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Hungary — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 2 Problem no.: 17

Juror: KUNDRATH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BULGARIA — 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 +0,2

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: HUNGARY — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: BELARUS — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1 +0,5

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 2 Problem no.: 17

Juror: Max Chalfin Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ____ 5

Physics ±3 +1

- + ☐ Correct and relevant physics
- + ☐ Scientific approach
- ~ ☐ Validity of conclusions
- − ☐ Accurate answers

Presentation ±1 0

- ~ ☐ Clear and understandable
- + ☐ Appropriate manner
- + ☐ Overall impression

Reporter ±1 +1

- + ☐ Quality of experimental technique(s)
- ~ ☐ Structure
- + ☐ Explanation of formulae and symbols
- + ☐ Appropriate models, conformity of dimensions
- + ☐ Slides, on-site experiments, audio, video, as appropriate
- ~ ☐ References, proper citations of ideas and input of others
- ~ ☐ Novelty of the report
- ~ ☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: ____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ~ ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −1

- ~ ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **4**

Rev.: ____ 5

Physics ±3 0

- + ☐ Correct and relevant physics
- + ☐ Scientific approach
- + ☐ Validity of conclusions
- + ☐ Accurate answers

Presentation ±1 +1

- ~ ☐ Clear and understandable
- + ☐ Appropriate manner
- + ☐ Overall impression

Reviewer ±1 +1

- + ☐ Provides a thorough review of report and discussion
- + ☐ Expresses own opinion about topics presented or discussed
- + ☐ Relevance of questions to both the reporter and the opponent
- + ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 2 Problem no.: 17

Juror: Kerry Parker Signature: Ker P.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nikolay Nikolov (Bulgaria) — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Andras Laslo (Hungary) — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Daniil Mnevets (Belarus) — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 2 Problem no.: 17

Juror: HUGO MARQUES Signature: Hugo Marques

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Hungary — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers — -1

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Belarus — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 2 Problem no.: 17

Juror: S. Byland Signature: SBy

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BUL — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☒ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: HUN — 5

Physics ±3 — −½

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −½

- ☑ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent ±1 — −½

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: BEL — 5

Physics ±3 — +½

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 2 Problem no.: 17

Juror: Felicia Ulstad Signature: Felicia Ulstad

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — 0

- [x] Correct and relevant physics
- [ ] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Hungary — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Belarus — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 3 Problem no.: 15

Juror: KONDRACIK Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: HUNGARY — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: BELARUS — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: BULGARIA — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 3 Problem no.: #15

Juror: MaxChalfin Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 2

Opp.: _____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 3 Problem no.: 15.

Juror: Kerry Parker Signature: Ker A.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Andreas Lauda (Hungary) — 5

Physics ±3 — −1

- ? ☐ Correct and relevant physics
- ✓ ☐ Scientific approach
- ? ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — —

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ? ☐ Novelty of the report
- ? ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Victor Loiko — 5

Physics ±3 — —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Ivelin Racher (Bulgaria) — 5

Physics ±3 — —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 3 Problem no.: 15

Juror: Hugo Marraine Signature: Hugo Marraine

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **4**

Opp.: Belarus — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **9**

Rev.: Bulgaria — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **8**

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 3 Problem no.: 15

Juror: S. Byland Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: HUN — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: BEL — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☒ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: BUL — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: F Stage: 3 Problem no.: 15

Juror: Felicia Ullstad Signature: Felicia Ullstad

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — -1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Belarus — 5

Physics ±3 — +1,5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Bulgaria — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 2 Room: F Fight Assistants: Ying Cui

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Belarus	Bulgaria	Hungary	Bulgaria	Hungary	Belarus	Hungary	Belarus	Bulgaria			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Frantisek Kundracik	6	7	6	7	4	7	4	7	7			
Max Chalfin	6	6	5	7	4	7	2	6	6			
Kerry Parker.	5	7	6	6	5	6	4	5	6			
Hugo Marrochio.	6	7	5	7	4	7	4	9	8			
Samuel Byland	5	5	5	7	4	~~7~~ 6.	3	7	6			
Felicia Ulstad.	7	5	6.	5	6.	7	3	7	7			
Acting Team Member	Anton Silyuk	Nikolay Nikolov	Linh Pham Thi	Nikolay Nikolov.	András Laukó	Daniil Mnevets.	András Laukó	Victor Loiko.	Ivelin Rachev.			
Rejected Problems												
Accepted Problem	7			17			15.					

Signature Fight Assistant: Ying Cui Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 2 Room: G Stage: 3 Problem no.: 1

Juror: Thomas Lindner Signature: Thomas Lindner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0 ~~0,5~~

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — ~~6~~ 5

Opp.: China — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: UAE — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 6 Stage: 3 Problem no.: 1

Juror: [illegible] Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: TW — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.25

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: CW — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: AS — 5

Physics ±3 — −2.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −0.25

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 2

Revised after IOC feedback and approved by EC on 2011-11-03

No1 accepted

Scoring Guidelines

Fight (Round no.): 2 Room: G Stage: 3 Problem no.: 1

Juror: L. Croxford Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: China — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: UAE — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

invent yourself

Scoring Guidelines

Fight (Round no.): 2 Room: G Stage: 3 Problem no.: 1

Juror: Nirut Signature: Nirut

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter and opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: China — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: UAE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 —

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: 6 Stage: 3 Problem no.: 1

Juror: Luisa Navarrete Signature: Luisa Navarrete

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3: +3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1:

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1:

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter: 8

Opp.: _____ 5

Physics ±3: -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1:

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent: 8

Rev.: _____ 5

Physics ±3:

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1:

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1:

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer: 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 11 Room: 6 Stage: 3 Problem no.: 1

Juror: IVAN ANTSIPAU Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: TAIWAN — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — +1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: CHINA — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: UAE — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0.4

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: G Stage: 2 Problem no.: 16

Juror: T. Croxford Signature: TSC.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter and opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Taiwan — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: China — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Magnetic brakes

Scoring Guidelines

Fight (Round no.): 2 Room: G Stage: 2 Problem no.: 16

Juror: Nirut Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: Taiwan — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: China — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 6 Stage: 2 Problem no.: _____

Juror: Ilana Hazard Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 -3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: _____ 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): II Room: 6 Stage: 2 Problem no.: 16

Juror: IVAN ANTSIPAU Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — -1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: TAIWAN — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: CHINA — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: G Stage: 2 Problem no.: 16

Juror: Thomas Lindner Signature: Thomas Lindner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — −2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Taiwan — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: China — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 6 Stage: 2 Problem no.: _____

Juror: [illegible] Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AE — 5

Physics ±3 -0.75

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.75

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **3**

Opp.: TW — 5

Physics ±3 +0.75

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: CN — 5

Physics ±3 1.25

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: G Stage: 1 Problem no.: 7

Juror: Thomas Lindner Signature: Thomas Lindner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: UAE — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 3

Rev.: Taiwan — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 9 Stage: 1 Problem no.: 7

Juror: [illegible] Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CW — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: TE — 5

Physics ±3 — -0.25

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.25

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: TW — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

No 7 accepted

Scoring Guidelines

Fight (Round no.): 2 Room: G Stage: 1 Problem no.: 7

Juror: T. Croxford Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: UAE — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 3

Rev.: Taiwan — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

pot-in-pot

Scoring Guidelines

Fight (Round no.): 2 Room: 6 Stage: 1 Problem no.: 7

Juror: Nirut Signature: Nirut

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: UAE — 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: Taiwan — 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 —

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 1 Room: 6 Stage: _____ Problem no.: 7

Juror: Ilona Kovarik Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: _____ 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 -1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: _____ 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): II Room: 6 Stage: 1 Problem no.: 7

Juror: IVAN ANTSIPAU Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CHINA — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ⊟ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0,5

- ⊟ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ⊟ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ⊟ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: UAE — 5

Physics ±3 — 0

- ⊟ Correct and relevant physics
- ☐ Scientific approach
- ⊟ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 3

Rev.: TAIWAN — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — 0

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ⊟ Relevance of questions to both the reporter and the opponent
- ⊟ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Round: 2 Room: 6 Fight Assistants:

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	China	UAE	Taiwan	UAE	Taiwan	China	Taiwan	China	UAE			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Ivan Artsipau	6	3	7	3	7	7	7	7	4			
Ilona Massarsky	6	5	7	3	6	6	8	8	5			
Nirut Pussadee	5	4	6	3	6	7	8	8	5			
Tim Croxford	7	3	6	5	6	7	7	7	4			
Kiera Zadra	5	4	5	3	6	7	7	8	2			
Thomas Linder	5	3	6	2	5	6	5	6	3			
Acting Team Member	Liu Ruihao	Lloyd Adams	Yen-Ju Wu	Karan Kumar	Chung-Chun Hsieh	Zhao Yixin	Wei-Tao Chen	Zhao Yixin	Niranjan Ravichandra			
Rejected Problems	—			—			—					
Accepted Problem	7			16			1					

Signature Fight Assistant: Di Xia Double-checked with Scoring Guidelines by second Fight Assistant (signature):

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 3 Problem no.: 16

Juror: Lobyshev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Radost Poland — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Slovenia Janez — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Brasil — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 3 Problem no.: 16

Juror: Qian Sun Signature: Qian Sun

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ~~Slovenia~~ Portland — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Slovenia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Brazil — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 3 Problem no.: 16

Juror: Prapun Manyum Signature: P. Manyum

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Slovenia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.6

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Brasil — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 3 Problem no.: 16

Juror: Reichle Signature: Reichle

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 — 1,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Slovenija — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Brazil — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☒ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 3 Problem no.: 16

Juror: Pashko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0,5

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 +0,5

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Slovenija — 5

Physics ±3 0,5

- [ ] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 0,5

- [ ] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent **6**

Rev.: Brasil — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **5**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 11 Room: H Stage: 3. Problem no.: 16

Juror: DAGMAR PANOŠOVÁ Signature: Panošová

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Po — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 +1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate (k)
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Sl — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0,5

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Br — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 2 Problem no.: 8

Juror: Lobyshev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Demetrius Brasil — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Miara Poland. — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Slovenia — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 2 Problem no.: 8

Juror: Qian Sun Signature: Qian Sun

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Portland — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Slovenia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 2 Problem no.: 8

Juror: Bojan Marjanović Signature: P. Marjanović

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brasil — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Poland — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Slovenia — 5

Physics ±3 — –

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — –

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — –

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 2 Problem no.: 8

Juror: Reichl Signature: Reichl

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Poland — 5

Physics ±3 — 10

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent ±1 — 0,5

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7,5

Rev.: Slovenija — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☒ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 2 Problem no.: 8

Juror: Pashko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brasil — 5

Physics ±3 +1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0,5

- [x] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Reporter ±1 +0,5

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [x] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Poland — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 +1

- [ ] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent **6**

Rev.: Slovenija — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **5**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 11 Room: H Stage: 2. Problem no.: 8

Juror: JAGMAR PANOŠOVÁ Signature: Panošová

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bm — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — +0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ± Novelty of the report B:
- ☑ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Po — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +0,5

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ± Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Sl — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,25

- ☑ Clear and understandable
- ± Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 1 Problem no.: 9

Juror: Lobyshev Signature: Blank

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Reject N 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Brasil — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Poland — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 1 Problem no.: ____

Juror: Qian Sun Signature: Qian Sun

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Brazil — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Portland. — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): [illegible] Room: H Stage: 1 Problem no.: 9

Juror: Prapun Manyum Signature: P. Manyum

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — −2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Brasil — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Poland — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 1 Problem no.: 9

Juror: Reichle Signature: Reichle

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenija — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Brazil — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Poland — 5

Physics ±3 — 0,5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reviewer ±1 — 0,5

- ☒ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: H Stage: 1 Problem no.: 9

Juror: Pashko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SLOVENIA — 5

Physics ±3 — -1

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — -1

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 3

Opp.: BRASIL — 5

Physics ±3 — +0,5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: POLAND — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reviewer ±1 — +1

- [ ] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 11. Room: H Stage: 1. Problem no.: 9

Juror: DAGMAR PANOŠOVÁ Signature: Panošová

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sk — 5

Physics ±3 — -1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☒ Clear and understandable graphs
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Bk — 5

Physics ±3 — +0,5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Po — 5

Physics ±3 — +0,5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 2 Room: H Fight Assistants: Sang Jinghan

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Slovenia	Brazil	Poland	Brazil	Poland	Slovenia	Poland	Slovenia	Brazil			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Valentin Lobyshev	4	5	~~Radost~~ 8 ~~Waszkiewicz~~	6	6	5	7	7	7			
Qian Sun	3	6	8	7	6	6	8	5	7			
prapun Mangum	4	6	7	7	8	5	7	7	7			
Rainer Reichle	4	6	7	7	7	6	7	6	6			
maksym pashko	3	6	7	7	6	5	7	6	5			
Dagmar Panosova	3	7	7	7	7	5	8	6	5			
Acting Team Member	ERIK PLEŠKO	Lucas Levy	Radost Waszkiewicz	Gabriel Demetrius	Tymoteusz Mariara	UROŠ ~~ZAVRTANIK~~ ZAVRTANIK	RADOST Vlahkievce	JANEZ TURNŠEK	Giorani Ceatto			
Rejected Problems	5. Loaded loop.			—			7. 11. 7. Pot-in-pot refrigerator 11. Candle power plant					
Accepted Problem	9. Water bombs			8. Freezing droplets			16. Magnetic brakes chair.					

Signature Fight Assistant: Sang Jinghan Double-checked with Scoring Guidelines by ~~second Fight Assistant~~ (signature): Blanka

Scoring Guidelines

Fight (Round no.): 2 Room: I Stage: 1 Problem no.: 9

Juror: Shchetnikov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: New Zeeland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0,5

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ? ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner ?
- ☐ Overall impression

Opponent ±1 — -0,5

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ? ☒ Relevance of the questions
- ? ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Slovakia — 5

Physics ±3 — 0

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: I Stage: 1 Problem no.: 9

Juror: ChuanTong Li Signature: ChuanTong Li

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: New Zealand — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Ukraine — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Slovakia — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: I Stage: 1 Problem no.: 9

Juror: A ALLINSON Signature: WATER BOMBS

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NZ Stanley — 5

Physics ±3 — ½

- ☐ Correct and relevant physics ✓
- ☐ Scientific approach ✓ depth -½
- ☐ Validity of conclusions? ½
- ☐ Accurate answers ?

Presentation ±1 — 0

- ☐ Clear and understandable ✓ +½
- ☐ Appropriate manner ✓ -½
- ☐ Overall impression ✓ + A

Reporter ±1 — ½

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions -½
- ☐ Slides, on-site experiments, audio, video, as appropriate ✓ +1
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: UKR Kazebutsky — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach narrow view
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — ½

- ☐ Clear and understandable ✓
- ☐ Appropriate manner ✓
- ☐ Overall impression ✓

Opponent ±1 — 1/2

- ☐ Response to the reporter's solution good
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Slovakia Matej — 5

Physics ±3 — +1

- ☐ Correct and relevant physics ✓
- ☐ Scientific approach
- ☐ Validity of conclusions ✓
- ☐ Accurate answers

Presentation ±1 — ½

- ☐ Clear and understandable ✓
- ☐ Appropriate manner ✓
- ☐ Overall impression ✓

Reviewer ±1 — ½

- ☐ Provides a thorough review of report and discussion ✓
- ☐ Expresses own opinion about topics presented or discussed ✓
- ☐ Relevance of questions to both the reporter and the opponent ✓
- ☐ Draws attention to points missed by the reporter or the opponent ✓

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 1 Stage: 1 Problem no.: 9

Juror: MIHÁLY HÖMÖSTREI Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: New Zealand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Slovakia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 1 Stage: 1 Problem no.: 9

Juror: Temuraz Chichua Signature: T. Chichua

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NZ — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: UA — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: SK — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: I Stage: 1 Problem no.: 9

Juror: Jakob Lavrød Signature: Jakob Lavrød

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 3

Rev.: 5

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

11. rej 3 rej 7 P.P.

Fight (Round no.): 2 Room: I Stage: 2 Problem no.: ____

Juror: A Allinson Signature: Alan Allinson

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UKRAINE Borys — 5

Physics ±3 — -½

- ☐ Correct and relevant physics ½
- ☐ Scientific approach ?-½
- ☐ Validity of conclusions ? Best because its best.
- ☐ Accurate answers ?

Presentation ±1 — ½

- ☐ Clear and understandable ✓
- ☐ Appropriate manner ✓
- ☐ Overall impression

Reporter ±1 — —

- ☐ Quality of experimental technique(s) —
- ☐ Structure ✓
- ☐ Explanation of formulae and symbols — too quick with model
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion ✓

Final Grade: Reporter — 5

Opp.: SLOVAKIA Jacmi — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — ½

- ☐ Clear and understandable ✓
- ☐ Appropriate manner ✓
- ☐ Overall impression

Opponent ±1 — —

- ☐ Response to the reporter's solution pw!
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report ignored math model.
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: NEW ZEALAND — 5

Physics ±3 — —

- ☐ Correct and relevant physics
- ☐ Scientific approach ✓ ok but room for more
- ☐ Validity of conclusions
- ☐ Accurate answers ΔT? is the coldest

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed ✓
- ☐ Relevance of questions to both the reporter and the opponent ✓
- ☐ Draws attention to points missed by the reporter or the opponent ✓

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 1 Stage: 2 Problem no.: 7

Juror: MIHÁLY HÖMÖSTREI Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Slovakia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — ~~0.5~~ 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: New Zealand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: I Stage: 2 Problem no.: 7

Juror: Teimuraz Chichua Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: SK — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: NZ — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: I Stage: F Problem no.: 7

Juror: Jakob Lavröd Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: 5

Physics ±3 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: I Stage: 2 Problem no.: 7

Juror: Shchetnikov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Slovakia — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: New Zeeland — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **6**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 1 Stage: 2 Problem no.: 7

Juror: Chuan Yong Li Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Slovakia — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: NZ — 5

Physics ±3 — +1.5

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 1 Stage: 3 Problem no.: 16

Juror: ChuanYong Li Signature: Chuanyong Li

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 — +0.5

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: NZ — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Ukraine — 5

Physics ±3 — +2

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: I Stage: 1 Problem no.: 16

Juror: Tamunaz Chichua Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SK

5

Physics ±3 1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: NZ

5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: UA

5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 1 Stage: 3 Problem no.: 16

Juror: MIHÁLY HÖMÖSTEGI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SLOVAKIA — 5

Physics ±3 — +3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 10

Opp.: New Zealand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

16 M

Fight (Round no.): 2 Room: I Stage: 3 Problem no.: 16

Juror: ALAN ALLINSON Signature: Alan Allinson

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Matej SLOVAKIA — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner -½
- ☐ Overall impression

Reporter ±1 — ½

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others ✓
- ☐ Novelty of the report
- ☐ Contribution to the discussion ✓

Final Grade: Reporter — 8

Opp.: Fran NZ — 5

Physics ±3 — 1

- ☐ Correct and relevant physics ✓
- ☐ Scientific approach ✓
- ☐ Validity of conclusions ✓
- ☐ Accurate answers ✓

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner quiet for to allow to go away from topic
- ☐ Overall impression

Opponent ±1 — ½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report ✓
- ☐ Finds shortcomings or errors in the report ✓
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Mykyta UKR — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach ✓
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable ✓
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — ½

- ☐ Provides a thorough review of report and discussion — 8
- ☐ Expresses own opinion about topics presented or discussed ✓ ½ (7)
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 2 Room: I Stage: 3 Problem no.: _____

Juror: Jakob Lavrød Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 9

Opp.: _____ 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: _____ 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: I Stage: 3 Problem no.: 16

Juror: Shchetnikov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 9

Opp.: New Zeeland — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Ukraine — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

?

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 2 Room: 1 Fight Assistants: Ruizhi Zuo

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	New Zealand	Ukraine	Slovakia	Ukraine	Slovakia	New Zealand	Slovakia	New Zealand	Ukraine			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Alan Allinson	6	7	7	5	6	7	8	8	7			
Mihály Lőmöstrei	7	6	8	4	7	7	10	6	4			
Teimuraz Chichua	6	6	7	6	6	6	8	7	6			
Jakob Lavrod	6	3	5	3	7	6	9	7	6			
Andrey Shchetnikov	6	4	6	7	6	6	9	7	5			
ChuanYang Li	7	7	8	5	7	7	8	7	8			
Acting Team Member	Stanley Sarkies	Oleksii Kosobutskyi	Matej Badin	Borys Solovov	Jakub Chudík	Stanley Sarkies	Matej Badin	Francesca Templer	Mykyta Shchedrolosyev			
Rejected Problems				11. 3.								
Accepted Problem	9			7			16.					

Signature Fight Assistant:..... Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 2 Room: J Stage: 1 Problem no.: 7

Juror: G. Jennings Signature: G. C. Jennings

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — Iva Dominović — 5

Physics ±3 −1

- ☑ Correct and relevant physics
- ⊟ Scientific approach
- ⊟ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 0

- ⊟ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **4**

Opp.: Sweden — Daniel Jacobsson — 5

Physics ±3 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ⊟ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent **5**

Rev.: Switzerland — Trevor McCants — 5

Physics ±3 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ⊞ Provides a thorough review of report and discussion
- ⊞ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **6**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 1 Stage: 1 Problem no.: 7

Juror: Astashynski Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Sweden — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Switzerland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: J Stage: 1 Problem no.: 7

Juror: STANISLAV PAVOŠ Signature: Pavoš

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — −1

- [−] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [+] Clear and understandable
- [+] Appropriate manner
- [+] Overall impression

Reporter ±1 — −1

- [ ] Quality of experimental technique(s)
- [+] Structure
- [ ] Explanation of formulae and symbols
- [−] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [−] References, proper citations of ideas and input of others / no citation
- [−] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: SWEDEN — 5

Physics ±3 — +0,5

- [+] Correct and relevant physics
- [+] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [+] Clear and understandable
- [ ] Appropriate manner
- [+] Overall impression

Opponent ±1 — +1

- [ ] Response to the reporter's solution
- [+] Shows the strong and weak points of the report
- [+] Finds shortcomings or errors in the report
- [+] Relevance of the questions
- [+] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: SWITZERLAND — 5

Physics ±3 — +0,5

- [+] Correct and relevant physics
- [+] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [+] Clear and understandable
- [+] Appropriate manner
- [ ] Overall impression
- [−] TIME!

Reviewer ±1 — +1

- [+] Provides a thorough review of report and discussion
- [+] Expresses own opinion about topics presented or discussed
- [+] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 1 Stage: 1 Problem no.: 7

Juror: [signature] Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — -1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Sweden — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Switzerland — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — 0

- ☒ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 5 Stage: 1 Problem no.: ____

Juror: M.H. Kwon Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Dominović (Croatia) — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Daniel (Swedish) — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Trevor. (Swiss) — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: J Stage: 1 Problem no.: ____

Juror: Craig McDonagh Signature: CMcD

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — -1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — -0.5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Sweden — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach ✓
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Switzerland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — + 0.5

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 2 Room: J Stage: 2 Problem no.: 13

Juror: G. Jennings Signature: G. Jennings

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden

Sabrina Yue Wang — 5

Physics ±3 — +0.5

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0.25

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0.25

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [+] Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Switzerland

Tim Hogan — 5

Physics ±3 — +0.5

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0.25

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0.25

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Croatia

Danaej Pluscec — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: J Stage: 2 Problem no.: 13

Juror: STANISLAV PANOŠ Signature: Pan-E

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SWEDEN — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ? ☐ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: SWITZERLAND — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: CROATIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

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Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 5 Stage: 2 Problem no.: 13

Juror: M. H. Kwon Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: swedish wang — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Swiss Tim — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Croatia Domagoj — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 2 Room: J Stage: 2 Problem no.: 13

Juror: Oryke Signature: Oryke

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 — ~~+0~~

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — ~~+0~~

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Switzerland — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Opponent ±1 — 0

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Croatia — 5

Physics ±3 — 0

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reviewer ±1 — +1

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: J Stage: 2 Problem no.: 13

Juror: Craig McDonagh Signature: C McD

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden. — 5

Physics ±3 — 0

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.5

- [ ] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — +0.5

- [x] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Switzerland — 5

Physics ±3 — 0

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.5

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +0.5

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Croatia — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0.5

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +0.5

- [x] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5.

Scoring Guidelines

Fight (Round no.): 2 Room: 7 Stage: 2 Problem no.: 13

Juror: V. Astashynski Signature: B.A.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,5

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Switzerland — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: Croatia — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **5**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: J Stage: 3 Problem no.: 14

Juror: G. Jennings Signature: G. Jennings

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — Michael Rogenmoser — 5

Physics ±3 — 0

- [-] Correct and relevant physics
- [0] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — +0.5

- [✓] Quality of experimental technique(s)
- [✓] Structure
- [✓] Explanation of formulae and symbols
- [✓] Appropriate models, conformity of dimensions
- [✓] Slides, on-site experiments, audio, video, as appropriate
- [✓] References, proper citations of ideas and input of others
- [✓] Novelty of the report
- [✓] Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Croatia — Ilena Benko — 5

Physics ±3 — -½

- [0] Correct and relevant physics
- [0] Scientific approach
- [0] Validity of conclusions
- [0] Accurate answers

Presentation ±1 — -0.25

- [-] Clear and understandable
- [0] Appropriate manner
- [-] Overall impression

Opponent ±1 — -0.25

- [-] Response to the reporter's solution
- [0] Shows the strong and weak points of the report
- [0] Finds shortcomings or errors in the report
- [-] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Sweden — Alexander Akesson — 5

Physics ±3 — -½

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.75

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +0.75

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: J Stage: 3 Problem no.: 14

Juror: STANISLAV PALOŠ Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SWITZERLAND — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0,5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: CROATIA — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: SWEDEN — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression
- ☐ SMALL FONT OF TEXT

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: 5 Stage: 3 Problem no.: 14

Juror: M.H. Kwon Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Swiss Michael — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Croatia Ranko — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Sweden Alexandra — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: J Stage: 3 Problem no.: 14

Juror: [signature] Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 0

- ☒ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☑ Quality of experimental technique(s)
- ☒ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Croatia — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Sweden — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: J Stage: 3 Problem no.: 14

Juror: Craig McDonough Signature: C. McD

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 — −1 (0)

hysterisis Millers

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.5

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

difficult for exp. method

Reporter ±1 — +0.5

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Croatia — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +0.5 (0)

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Sweden — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0.5

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +0.5

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: J Stage: 3 Problem no.: 14

Juror: V Astashynski Signature: B. A

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions (err. bars)
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Croatia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Sweden — 5

Physics ±3 — -0,3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 2 Room: J Fight Assistants: 杨鹏宇 Pengyu Yang

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	HR	SE	CH	SE	CH	HR	CH	HR	SE			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Gavin Jennings	4	5	6	6	6	5	6	4	6			
Valiantsin Astashynski	5	6	6	7	6	5	5	4	6			
Stanislav Panos	4	7	7	6	7	6	5	5	6			
Craig McDonagh	4	7	6	6	6	5	5	7	6			
Qing Ye	4	6	7	5	6	6	6	6	7			
Myeung Hoi Kwon	4	4	6	7	7	7	5	6	6			
Acting Team Member	Iva Dominovic	Daniel Jacobsson	Trevor McCants	Solarin ~~Yue~~ Wong	Tim Hogan	Danagoj Plvšec	Micheal Rogemoser	Ilona Benko	Alexander Ålesson			
Rejected Problems	6 12											
Accepted Problem	7			13			14					

Signature Fight Assistant: 杨鹏宇 Pengyu Yang Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 1 Problem no.: 13

Juror: Kathryn Zealand Signature: KZealand.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgi B — 5

good grasp of theory but limited experimental

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☑ Appropriate manner — shame about videos.
- ☑ Overall impression — very fast through mathematics

Reporter ±1 — 0

- ☑ Quality of experimental technique(s) limited
- ☑ Structure
- ☑ Explanation of formulae and symbols Fast!!
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Vitali — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

spoke well

Opponent ±1 — +½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

good opposition of theory, but need to discuss experiments.

Final Grade: Opponent — 7

Rev.: Joel Tan — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +½

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Don't judge in questions

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 1 Problem no.: 13

Juror: LARS GISLÉN Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 1

- [ ] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — 1

- [x] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Russia — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 1

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [x] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Singapore — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 1

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 1

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

rotating

Fight (Round no.): 3 Room: A Stage: 1 Problem no.: 13

Juror: Nirut Signature: Nirut

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Russia — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Singapore — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 —

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 1 Problem no.: 13

Juror: Reichle Signature: Reichle

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Russia — 5

Physics ±3 — 0,5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0,5

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Singapore — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 1 Problem no.: 13

Juror: ChanOung Park Signature: ChanOung Park

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 — −1

- ☑ Correct and relevant physics −0.5
- ☐ Scientific approach
- ☑ Validity of conclusions −0.5
- ☐ Accurate answers

Presentation ±1 — −0.5

- ☑ Clear and understandable
- ☐ Appropriate manner −0.5
- ☐ Overall impression

Reporter ±1 — −0.5

- ☑ Quality of experimental technique(s) −0.5
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **3**

Opp.: Russia — 5

Physics ±3 — +0.5

- ☑ Correct and relevant physics
- ☐ Scientific approach +0.5
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report +0.5
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: Singapore — 5

Physics ±3 — +1.0

- ☑ Correct and relevant physics
- ☐ Scientific approach +0.5
- ☑ Validity of conclusions +0.5
- ☐ Accurate answers

Presentation ±1 — +1.0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression +1.0

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: | Problem no.: 13.

Juror: Kerry Packer. Signature: Ker Packer.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem (some.) • an ***explanation*** of the ***observed phenomena*** (not.) • an ***application*** of ***appropriate mathematics*** • reasonable ***experimental technique*** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia (Giorgi) — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **4**

Opp.: Singapore (Joel Fam.) Russia. — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Singapore — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **8**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: B Problem no.: 11

Juror: Kathryn Zealand Signature: K Zealand

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Vitalii — 5

Physics ±3 — -½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Li — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☒ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Vasilije — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 2 Problem no.: 11

Juror: Lars Gullen Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Singapore — 5

Physics ±3 — 0,5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Croatia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Candle

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 2 Problem no.: 11

Juror: Nirut Signature: Nirut

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Singapore — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Georgia — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 2 Problem no.: 11

Juror: Reichle Signature: Reichle

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter and opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 — 1,5

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Reporter ±1 — +0,5

- [ ] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Singapore — 5

Physics ±3 — +2

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0,5

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [x] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Croatia — 5

Physics ±3 — 0,5

- [ ] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0,5

- [x] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 2 Problem no.: 11

Juror: ChanYang Park Signature: ChanYang Park

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☑ Scientific approach +0.5
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1.0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression +1.0

Reporter ±1 0.5

- ☑ Quality of experimental technique(s) +0.5
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Singapore — 5

Physics ±3 +1.0

- ☑ Correct and relevant physics +1.0
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable +0.5
- ☑ Appropriate manner −0.5
- ☐ Overall impression

Opponent ±1 +1.0

- ☑ Response to the reporter's solution +0.5
- ☑ Shows the strong and weak points of the report +0.5
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Croatia — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☑ Clear and understandable 0.5
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 −0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent −0.5
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **5**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 93. Room: A. Stage: 2 Problem no.: 11.

Juror: Kemy Parker Signature: Ken P

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia Vitali Matiunin. — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Singapore Ling Binjian. — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Croatia. Vasilije Perović — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 —

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 3 Problem no.: 5

Juror: Kathryn Zealand Signature: K Zealand

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Joel — 5

good experiments but limited in scope.

Physics ±3 — +1½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — +½

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Domagaj — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

8 + ½

Final Grade: Opponent — 8½

Rev.: Giorgi — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 3 Problem no.: 5

Juror: LARS GUSTÉN Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SINGAPORE — 5

Physics ±3 — 3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 9

Opp.: CROATIA — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: GEORGIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

loaded hoop

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 3 Problem no.: 5

Juror: Nirut Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 — 3

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Croatia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Georgia — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 3 Problem no.: 5

Juror: Reichle Signature: Reichle

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 — +2,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 9

Opp.: Croatia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,5

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Georgia — 5

Physics ±3 — ~~1~~

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 3 Problem no.: 5

Juror: ChanDong Park Signature: ChanDong Park

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 +2.0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression +0.5

Reporter ±1 +0.5

- ☑ Quality of experimental technique(s) +0.5
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Croatia — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1.0

- ☑ Response to the reporter's solution +0.5
- ☑ Shows the strong and weak points of the report +0.5
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Georgia — 5

Physics ±3 +1.0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 3 Problem no.: 5

Juror: Kerry Parker Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Joel Tan Singapore. — 5

Physics ±3 +2.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: ~~Joel Tan~~ Stno Domagoj Pluščec Croatia. — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Giorgi Tsereteli. Georgia. — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 4 Problem no.: 9

Juror: Kathryn Zealand Signature: K Zealand

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Vasilije — 5

good conceptual understanding but lacking depth in theory and experiment — -1

Physics ±3

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — -½

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions — no theory-exp. comparison
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Giorgi — 5

Physics ±3 — +1½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☒ Relevance of the questions — no questions?
- ☐ Contribution to the discussion

did not fill time?

6.5↑

Final Grade: Opponent — 7

Rev.: Mikhail — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner — too fast!!
- ☑ Overall impression

Reviewer ±1 — +½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: 4 Stage: 4 Problem no.: 9

Juror: LARS GUSTA Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CROATIA — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: GEORGIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1+1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: RUSSIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Water bomb

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 4 Problem no.: 9

Juror: Nirut Signature: Nirut

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter: 4

Opp.: Georgia — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent: 5

Rev.: Russia — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 —

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer: 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 4 Problem no.: 9

Juror: Reichle Signature: Reichle

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — 2

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0,5

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0 (illegible)

- [x] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Georgia — 5

Physics ±3 — -0,5

- [ ] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0,5

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [x] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Russia — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — -0,5

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: A Stage: 4 Problem no.: 9

Juror: ChanOung Park Signature: ChanOung Park

#1X, #17X, #P water bomb

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — -1.0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Georgia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☑ Response to the reporter's solution +0.2
- ☑ Shows the strong and weak points of the report +0.3
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Russia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Scoring Guidelines

Fight (Round no.): 2 Room: A Stage: 4 Problem no.: 9

Juror: Kerry Parker Signature: Ker

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Vasilije Perović (Croatia) — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Giorgi Tsereteli (Georgia) — 5

Physics ±3 — −0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Mikhail Uptakov (Russia) — 5

Physics ±3 — ☐

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 3 Room: A Fight Assistants: Zixi Jia

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Georgia	Russia	Singapore	Russia	Singapore	Croatia	Singapore	Croatia	Georgia	Croatia	Georgia	Russia
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Kathryn Zeuland	5	7	8	5	5	7	8	8	6	4	7	6
Lars Gislen	8	7	8	7	6	6	9	6	5	4	5	6
Nirut Pussadee	5	6	7	5	7	6	8	6	5	4	5	5
Rainer Reichle	3	6	7	7	7	6	9	5	6	7	4	5
Chan Oung Park	3	6	7	7	7	5	8	6	7	4	5	5
Kerry Parker	4	7	8	7	7	4	7	7	7	4	4	5
Acting Team Member	Giogi Bakhtadze	Vitalii Matiunin	Joel Tan	Vitalii Matiunin	Li Bing Jian	Vasilije Perović	Joel Tan	~~Gio~~ Domagoj Pluščec	Giorgi Tsereteli	Vasilije Perović	Giorgi Tsereteli	Mikhail Luptakov
Rejected Problems								X			1, 17	
Accepted Problem	13			11			5			9		

Signature Fight Assistant: Zixi Jia Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 3 Problem no.: 2

Juror: S MARTIN Signature: SC Martin

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions inc ±%
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, ~~audio~~, ~~video~~, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Taiwan — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☑ Scientific approach typing hand is not working
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution an argument.
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Slovenia. — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☐ Scientific approach Balanced view of proceedings.
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 3 Problem no.: 2

Juror: Sze Guan Kheng Signature: SKe

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Taiwan — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Slovenia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 3 Problem no.: 2

Juror: MIHÁLY HÖMÖSTRÉI Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 03 Room: C Stage: 3 Problem no.: 02

Juror: TATYANA Signature: Tatyana G.S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0,5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Taiwan — 5

Physics ±3 — -0,5

- ☒ Correct and relevant physics → NO
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Slovenia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): III Room: C Stage: 3 Problem no.: 2

Juror: OSTERMEIER Signature: F. Ostermeier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,75

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Taiwan — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,25

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Slovenia — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,25

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 3 Problem no.: 2

Juror: GOLCEN-VISTA DV Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 — 2

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — −1

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Taiwan — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 —

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — −1

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Slovenia — 5

Physics ±3 —

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 —

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [ ] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 2 Problem no.: 3

Juror: S MARTIN Signature: SCMartin

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

changed the question

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

all rather ordinary

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, ~~audio~~, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

interesting but really qualitative

Final Grade: Reporter — 4

Opp.: Switzerland — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Not much theory quad. only

Presentation ±1 — +½

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Taiwan — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

in name not content

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer — 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 2 Problem no.: 3

Juror: Sze Guan Phng Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — -3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Switzerland — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Taiwan — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 2 Problem no.: 3

Juror: TATIANA Signature: Tatyana g.S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Switzerland — 5

Physics ±3 — +0,5

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Taiwan — 5

Physics ±3 — +0,5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 2 Problem no.: 3

Juror: MIHÁLY HÖMÖSTREI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Switzerland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Taiwan — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 (3) Room: C Stage: 2 Problem no.: 3

Juror: GOLCEN CAN Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter: 3

Opp.: Switzerland — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent: 4

Rev.: Taiwan — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer: 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): III Room: C Stage: 2 Problem no.: 3

Juror: OSTERMEIER Signature: F. Ostermeier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Switzerland — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,25

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Taiwan — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 1 Problem no.: 7

Juror: SANDU GOLCEA Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — −1

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Slovenia — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — −1

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [ ] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

5

Final Grade: Opponent — 6

Rev.: Switzerland — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [x] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): III Room: C Stage: 1 Problem no.: 7

Juror: OSTERMAIER Signature: F. Ostermaier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,75

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Slowenia — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 3

Rev.: Switzerland — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 1 Problem no.: 7

Juror: S MARTIN Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 — -½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers — no ± given only trends.

Presentation ±1 — -½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1

- ☒ Quality of experimental technique(s) — general trends only
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, ~~audio, video~~, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Slovenia — 5

Physics ±3 — -½

- ☐ Correct and relevant physics — but not on the problem.
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report — in places.
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

more an oral exam. than an opposition.

Final Grade: Opponent — 4

Rev.: Switzerland — 5

Physics ±3 — -½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions — good questions.
- ☐ Accurate answers

Presentation ±1 — -½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — -½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 1 Problem no.: 7

Juror: Sze Guan Kheng Signature: Sze

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Slovenia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Switzerland — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 1 Problem no.: 7

Juror: TATYANA Signature: Tatyana G.S.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,25

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,25

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Slovenia — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0,5

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Switzerland — 5

Physics ±3 +1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: C Stage: 1 Problem no.: 7

Juror: MIHÁLY [illegible] Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Slovenia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Switzerland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 3 Room: C Fight Assistants:

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Taiwan ~~Thailand~~	Slovenia	Switzerland	Slovenia	Switzerland	Taiwan	Switzerland	Taiwan	Slovenia			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Florian Ostermaier	4	3	7	4	6	5	7	5	6			
Francis Ejike Ekwenta (disappea)	5	5	6	3	4	6	6	5	6			
Mihaly Homostrel	5	5	7	3	6	4	4	6	6			
Tatyana Goncalves	6	6	7	4	6	6	6	5	6			
Guan Kheng Sze	7	4	7	2	6	5	4	7	5			
Steve Martin	6	4	6	4	6	6	6	5	6			
Acting Team Member	Ya-Chu Chan	VROS PRESERN	Trevor Mccants	Janee Turnsek	TIM Hogan	Chung-Chun Hsieh	Trevor Malants	Pei-Hsien Liu	Janee Turnsek			
Rejected Problems	X			X			X					
Accepted Problem	7			3			2					

replaced by ~~Gto~~ ~~Gto~~ Golcea Jandu

Signature Fight Assistant: Wang Jin Double-checked with Scoring Guidelines by second Fight Assistant (signature):

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 1 Problem no.: 3

Juror: REGNER Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland

Radost Waszkiewicz — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Korea

Ahn Cheong Eung — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Germany

Felix Wiedner — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 1 Problem no.: 3

Juror: Teimuraz Chichua Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Korea — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: German — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 —

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 1 Problem no.: 3

Juror: V. Astashynski Signature: B. K.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **8**

Opp.: Korea — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0,3

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: Germany — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -1

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **5**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 1 Problem no.: 3

Juror: Yung-Yuan Hsu Signature: Yung-Yuan Hsu

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Korea — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Germany — 5

Felix Webster, 2

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 1 Problem no.: ____

Juror: G. Jennings Signature: G. Jennings

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — Radost Waschewicz — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — +0.5

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — +0.5

- [ ] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Korea — Ahn Cheong Eung — 5

Physics ±3 — +1.5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.25

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +0.25

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Germany — Felix Wechsler — 5

Physics ±3 — +2

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +0.5

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 1 Problem no.: 3

Juror: Shchetnikov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Korea — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions (!)
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Germany — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 2 Problem no.: 8

Juror: Teimuraz Chichua Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Germany 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Poland 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 2 Problem no.: 8

Juror: REGNER Signature: Regner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

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- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea Jaan-Hyukka — 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Germany Vincent Stimper — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Poland Tymotheusz Michra — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 2 Problem no.: 8

Juror: V. Astashynski Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Germany — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Poland — 5

Physics ±3 -0,5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 31 Room: D Stage: 2 Problem no.: 8.

Juror: Yung-Yuan Hsu. Signature: Yung-Yuan Hsu

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea. Jon-Hyuk Kim

5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,5

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Germany. Voc.

5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8.

Rev.: Poland.

5

Physics ±3 +1 ~~+0,5~~

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7,5

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 2 Problem no.: 8

Juror: G. Jennings Signature: G C Jennings

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea

Joon-Hyuk Ko

5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Germany

Vincent Stumpf

5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Poland

Tymoteusz Miara

5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 2 Problem no.: 8

Juror: Shchetnikov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 +3

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Reporter ±1 +1

- [x] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [x] Novelty of the report (!)
- [ ] Contribution to the discussion

Final Grade: Reporter 10

Opp.: Germany — 5

Physics ±3 +1,5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

Presentation ±1 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 -0,5

- [x] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent 6

Rev.: Poland — 5

Physics ±3 +0,5

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 +0,5

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 3 Problem no.: _____

Juror: REANER Signature: Reaner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany Vincent Stimper — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Poland Robert Waszkiewicz — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Korea Jung Hun Lee — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 1 (2) Problem no.: 4

Juror: Teimuraz Chichua Signature: T. Chichua

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 — [ ]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 — [ ]

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Poland — 5

Physics ±3 — [ ]

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — [ ]

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Korea — 5

Physics ±3 — [ ]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — [ ]

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 3 Problem no.: 4

Juror: V. Astashynski Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Poland — 5

Physics ±3 +2

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Korea — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 3 Problem no.: 4

Juror: Yung-Yuan Hsu Signature: Yung-Yuan Hsu

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany. Vincent Stimper — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Poland Radost. Waszkiewicz — 5

Physics ±3 +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Korea. Jung-Min Lee — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 3 Problem no.: 4

Juror: G. Jennings Signature: G. Jennings

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — Vincent Stimper — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Poland — Radost Waszkiewicz — 5

Physics ±3 +1.5

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 + 0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 + 1.0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Korea — Jun Min Lee — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: D Stage: 3 Problem no.: 4

Juror: Shchetnikov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 — −1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions (frequency)
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0,5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Poland — 5

Physics ±3 — +3

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 9

Rev.: Korea — 5

Physics ±3 — −0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-01

Round: 3 Room: D Fight Assistants: Zheng Yu

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Poland	Korea	Germany	Korea	Germany	Poland	Germany	Poland	Korea			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Ulrike Regner	6	5	4	8	6	6	6	7	8			
Temuraz Chichua	6	6	6	7	6	6	6	7	6			
Valentsin Astashynski	8	6	5	8	7	5	8	7	6			
Yung-Yuan Hsu	4	6	8	6	8	7	6	7	7			
Gavin Jennings	7	7	8	8	7	7	6	8	7			
Andrey Shchetnikov	6	6	9	10	6	6	4	9	5			
Acting Team Member	Radosł Wlaszkewicz	Ahn Cheong Eung	Felix Wechsler	Joon-Hyuk Ko	Vincent Stimper	Tymoteusz Miara	Vincent Stimper	Radosł Waszkiewicz	Jung Min Lee			
Rejected Problems	X			X			1. Invent yourself					
Accepted Problem	3. Twisted rope			8. Freezing droplets.			4. Ball sound					

Signature Fight Assistant: ZHENG YU Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 1 Problem no.: 6

Juror: PHIL O'NEILL Signature: P O'Neill

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: MACAU — 5

Physics ±3

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — -1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: BELARUS — 5

Physics ±3

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: BRAZIL — 5

Physics ±3

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 1 Problem no.: _____

Juror: Hera Hassack Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 [ ]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 [-1]

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter [4]

Opp.: _____ 5

Physics ±3 [0]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 [1]

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent [6]

Rev.: _____ 5

Physics ±3 [ ]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [-1]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 [ ]

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer [4]

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 1 Problem no.: 6

Juror: STANISLAV PANOŠ Signature: Pan - E

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — −1

- [−] Correct and relevant physics
- [ ] Scientific approach
- [−] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — −0,5

- [ ] Clear and understandable
- [+] Appropriate manner
- [−] Overall impression

Reporter ±1 — −0,5

- [+] Quality of experimental technique(s)
- [+] Structure
- [ ] Explanation of formulae and symbols
- [−] Appropriate models, conformity of dimensions
- [−] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [−] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Belarus — 5

Physics ±3 — −1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [ ] Clear and understandable
- [+] Appropriate manner
- [+] Overall impression

Opponent ±1 — +0,5

- [+] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [+] Finds shortcomings or errors in the report
- [+] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Brazil — 5

Physics ±3 — −0,5

- [−] Correct and relevant physics
- [ ] Scientific approach
- [−] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — −0,5

- [+] Clear and understandable
- [−] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0

- [ ] Provides a thorough review of report and discussion
- [+] Expresses own opinion about topics presented or discussed
- [−] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 1 Problem no.: 6

Juror: [illegible] Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — -1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — -1

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Belarus — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Opponent ±1 — 0

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Brazil — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reviewer ±1 — 0

- [x] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 1 Problem no.: 6

Juror: Thomas Lindner Signature: Thomas

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — -1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Belarus — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Brazil — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — /

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — /

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 2 Room: E Stage: 1 Problem no.: 6

Juror: PLZSCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 2 Problem no.: 15

Juror: PHIL O'NEILL Signature: PO'Neill

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BELARUS — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: BRAZIL — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: MACAO — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 2 Problem no.: ____

Juror: Ilaria Massaro Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ____ 5

Physics ±3 3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: ____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: ____ 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 2 Problem no.: 15

Juror: STANISLAV PALOŠ Signature: Pan-S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 +2

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 0

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter ±1 -1

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate OK
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Brazil — 5

Physics ±3 +1,5

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Macao — 5

Physics ±3 -1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

☒ SMALL FONT

Reviewer ±1 0

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 2 Problem no.: 15

Juror: [signature] Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — 0

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate — not clear
- [x] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Brazil — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Opponent ±1 — 0

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Macao — 5

Physics ±3 — -1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reviewer ±1 — 0

- [x] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 2 Problem no.: 15

Juror: Thomas Lindner Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 — 1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Brazil — 5

Physics ±3 — 1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Macao — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: R Stage: 2 Problem no.: 15

Juror: PLESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: 5

Physics ±3 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3 -1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,8

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0,8

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 3 Problem no.: 11

Juror: Phil O'NEILL Signature: PJO'Neill

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BRAZIL — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: MACAO — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: BELARUS — 5

Physics ±3

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 3 Problem no.: _____

Juror: Ilaria Massari Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 [-1]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [-1]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 [-1]

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter [3]

Opp.: _____ 5

Physics ±3 [-1]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 [-1]

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent [3]

Rev.: _____ 5

Physics ±3 [±0]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 [ ]

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer [5]

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 3 Problem no.: 11

Juror: STANISLAV PANOŠ Signature: Pan-E

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BRAZIL — 5

Physics ±3 — −1

- [−] Correct and relevant physics
- [+] Scientific approach
- [−] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0

- [+] Clear and understandable
- [+] Appropriate manner
- [+] Overall impression

Reporter ±1 — −1

- [ ] Quality of experimental technique(s)
- [+] Structure
- [+] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [+] References, proper citations of ideas and input of others
- [+] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Macao — 5

Physics ±3 — −1

- [+] Correct and relevant physics
- [ ] Scientific approach
- [−] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [+] Clear and understandable
- [+] Appropriate manner
- [ ] Overall impression
- [−] LOW VISIBILITY

Opponent ±1 — 0

- [+] Response to the reporter's solution
- [+] Shows the strong and weak points of the report
- [+] Finds shortcomings or errors in the report
- [−] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Belarus — 5

Physics ±3 — 0

- [−] Correct and relevant physics
- [ ] Scientific approach
- [−] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [+] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0

- [ ] Provides a thorough review of report and discussion
- [+] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 3 Problem no.: 4

Juror: Dayee Signature: Dayee

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Macao — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Belarus — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 3 Problem no.: 11

Juror: Thomas Lindner Signature: Thomas Lindner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Macau — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 3

Rev.: Belarus — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 3 Problem no.: 11

Juror: PLB SCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
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- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 3 Room: E Fight Assistants: Fanglin Lin

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Macao	Belarus	Lucas Levy	Belarus	Brazil	Macao	Brazil	Macao	Belarus			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Philip O'Neil	5	5	7	7	7	3	3	5	5			
Zilana Massarek	4	6	4	6	5	3	3	3	5			
Stanislav Panos	3	5	4	6	7	3	3	4	5			
Qing Ye	3	6	7	6	6	3	5	5	6			
Thomas Linder	3	7	6	7	7	3	4	3	6			
Martin Plesch	3	7	5	5	7	3	4	4	5			
Acting Team Member	Xie Jing Yi	Anastasiya Kozlova	Lucas Levy	Victor Loike	Giovani Ceatta	Alexrandra Santos	Gabriel Demetrius	Herman dai	Mikita Akulich			
Rejected Problems				11								
Accepted Problem	6			15			11					

Signature Fight Assistant: Fanglin Lin Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 11 Room: F Stage: X Problem no.: 3

Juror: IVAN ANTSIPAU Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NIGERIA — 5

Physics ±3 — -2

- [-] Correct and relevant physics
- [-] Scientific approach
- [-] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [-] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — ~~-1~~ 0

- [-] Quality of experimental technique(s)
- [-] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [-] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [-] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 3

Opp.: ROMANIA — 5

Physics ±3 — +1

- [+] Correct and relevant physics
- [ ] Scientific approach
- [+] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0,4

- [-] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — -0,5

- [ ] Response to the reporter's solution
- [-] Shows the strong and weak points of the report
- [-] Finds shortcomings or errors in the report
- [-] Relevance of the questions
- [-] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: BULGARIA — 5

Physics ±3 — 0

- [-] Correct and relevant physics
- [ ] Scientific approach
- [-] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [-] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — ~~-1~~ 0

- [+] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [-] Relevance of questions to both the reporter and the opponent
- [-] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 1 Problem no.: 5

Juror: Prapun Manyum Signature: P. Manyum

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Romania — 5

Physics ±3 — -

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Bulgaria — 5

Physics ±3 — -

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 1 Problem no.: 5

Juror: E. Casali Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Romania — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Bulgaria — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 1 Problem no.: 5

Juror: Pashko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — -1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter: 3

Opp.: Romania — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent: 4

Rev.: Bulgaria — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer: 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 1 Problem no.: _____

Juror: [illegible] Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: _____ 5

Physics ±3 -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0.25

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: _____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 1 Problem no.: _____

Juror: Jakob Lavrød Signature: Jakob Lavrød

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 1

Opp.: _____ 5

Physics ±3 -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: _____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): III Room: F Stage: 2 Problem no.: 2

Juror: IVAN ANTSIPAU Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ROMANIA — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — -0,4

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: BULGARIA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☒ Appropriate manner
- ☑ Overall impression

Opponent ±1 — -1

- ☑ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: NIGERIA — 5

Physics ±3 — 0

- ☒ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -1

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 2 Problem no.: 12

Juror: Prapun Manyum Signature: P. Manyum

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Bulgaria — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

P. Manyum

Rev.: Nigeria. — 5

Physics ±3 — -

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 2 Problem no.: 12

Juror: E. Casali Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Bulgaria — 5

Physics ±3 — 1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1/2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Nigeria — 5

Physics ±3 — −1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 2 Problem no.: 12

Juror: Pashko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 — -1,5

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Reporter ±1

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Bolgaria — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Nigeria — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Reviewer ±1 — -0,5

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: E Stage: 2 Problem no.: 12

Juror: [illegible] Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

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- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: RO — 5

Physics ±3 -1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.25

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: DC — 5

Physics ±3 -0.25

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: NE — 5

Physics ±3 -0.25

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0.25

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 2 Problem no.: 12

Juror: Jakob Lavrød Signature: Jakob Lavrød

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 2

Opp.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): III Room: H Stage: 3 Problem no.: E

Juror: IVAN ANTSIPAU Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BULGARIA — 5

Physics ±3 — -0,5

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0,5

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — -0,25

- [x] Quality of experimental technique(s)
- [x] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Nigeria — 5

Physics ±3 — -0,25

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — -0,25

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: ROMANIA — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — -0,5

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 3 Problem no.: 7

Juror: Rapun Mangum Signature: P. Mangum

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 –

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 –

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **6**

Opp.: Nigeria — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **5**

Rev.: Romania — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 3 Problem no.: 7

Juror: E. Caseli Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
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- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — 3/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7/6

Opp.: Nigeria — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Romania — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 3 Problem no.: 7

Juror: Pashko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bolgaria — 5

Physics ±3 — 0,5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Nigeria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Romania — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +0,5

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 3 Problem no.: 7

Juror: [illegible] Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: RG — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: NG — 5

Physics ±3 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: RO — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: F Stage: 3 Problem no.: 7

Juror: Jakob Lavrid Signature: Jakob Lavrid

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 3 Room: F Fight Assistants: Ying Cui

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Nigeria	Romania	Bulgaria	Romania	Bulgaria	Nigeria	Bulgaria	Nigeria	Romania			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Ivan Antsipau.	3	5	5	4	5	4	5	5	6			
Prapun Manyum.	3	5	4	4	7	5	6	5	7			
Eduardo Casalli.	3	5	6	4	6	4	7	4	5			
Maksym Pashko.	3	4	5	3	5	4	6	5	6			
Kreso Zadro.	3	4	5	3	4	4	5	4	6			
Jakob Lavrod.	1	4	5.	2	7	4	6	5	5.			
Acting Team Member	Jim Omoigberale	Horia. Măgureanu.	Aleksandar Ivanov.	Alexandra Modrea.	Ivan Tsonev.	Habeeb Sanusi.	Nikolay Nikolov.	Mustapha. Amina Tukar	Ana. Cuculis.			
Rejected Problems												
Accepted Problem	5.			12.			7.					

Signature Fight Assistant: Ying Cui. Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 3 Problem no.: 2

Juror: Timoshchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Hungary — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Australia — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 3 Problem no.: _____

Juror: MATEV Signature: MMatev

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -2.5

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 1

Opp.: Hungary — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Australia — 5

Physics ±3 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 3 Problem no.: 2

Juror: Leszek Głodek Signature: L. Głodek

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 1

Opp.: _____ — 5

Physics ±3 — 0.5

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: _____ — 5

Physics ±3 — 0.5

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reviewer ±1 — 0

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 3 Problem no.: 2

Juror: KimF Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 1

Opp.: Hungary — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 3

Rev.: Australia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: 4 Stage: 3 Problem no.: 2

Juror: Qian Sun Signature: Q Sun

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AE — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: HU — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: AV — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 3 Problem no.: ~~1~~ 2

Juror: Maslechko a. Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nikhil Srinivasan (UAE) — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Linh Pham Thi (Hungary) — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Douglas Coulter (Australia) — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 2 Problem no.: 14

Juror: Qian Sun Signature: Q- Sun

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AW — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: AE — 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 3

Rev.: HO — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 05

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 2 Problem no.: 14

Juror: Kim F Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 — 0

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0

- [x] Quality of experimental technique(s)
- [ ] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 5

Opp.: UAE — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +1

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Hungary — 5

Physics ±3 — -1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — -1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 2 Problem no.: H

Juror: Leszek Grodecki Signature: L. Grodecki

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: UAE — 5

Physics ±3 — -1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Hungary — 5

Physics ±3 — -1

- ☒ ~~Correct and relevant physics~~
- ☒ ~~Scientific approach~~
- ☒ ~~Validity of conclusions~~
- ☒ ~~Accurate answers~~

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 2 Problem no.: 14

Juror: Timoshchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: UAE — 5

Physics ±3 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Hungary — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 2 Problem no.: 14

Juror: Maslechko a. Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Alastair Butcher (Australia) — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Niranjan Rashicha Nata (UAE) — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: András Lauko (Hungary) — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: G1 Stage: 2 Problem no.: 14

Juror: MATEV Signature: M Matev

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: UAE — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Hungary — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 1 Problem no.: 12

Juror: Kim F Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter and opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Australia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: UAE — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: 6 Stage: 1 Problem no.: 12

Juror: MATEV Signature: MMatev

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Australia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: UAE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: 6 Stage: 1 Problem no.: 12

Juror: Leszek Głodziuk Signature: L. Głodziuk

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Australia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: UAE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 1 Problem no.: 12

Juror: Timoshchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.8

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Australia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: UAE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 1 Problem no.: 12

Juror: Maslechko a. Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: (Hungary) 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: (Australia) 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: (UAE) 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: 4 Stage: 1 Problem no.: 12

Juror: Qian Sun Signature: Q Sun

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: HU — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: AV — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: AE — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 05

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 3 Room: 6 Fight Assistants:.....

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Hungary	Australia	UAE	Australia	UAE	Hungary	UAE	Hungary	Australia			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Kim Freiwerm.	5	5	3	5	6	3	1	3	4			
Qian Sun	5	6	5	4	3	5	2	6	5			
Anastasiia Maslenko	4	7	3	6	5	5	2	6	6			
Leszek Gladczuk	7	6	4	4	4	4	1	6	6			
Mladen Madev	6	7	6	6	5	4	1	4	4			
Igor Timoshchenko	6	7	5	5	4	4	2	8	9			
Acting Team Member	Ábel Beregi	~~Elaine~~ ~~Ulrich~~ Alastair Butcher	Vishal Zepbert	Alastair Butcher	Niranjan Ravichandren	András Laukó	Nikhil Srinivasan	Linh Pham Thi	Douglas Coulter			
Rejected Problems	———			———			7 1 ~~8~~					
Accepted Problem	12			14			2					

Signature Fight Assistant: Di Xiao Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 3 Room: 14 Stage: 3 Problem no.: 17

Juror: KVONDRACK Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Cuba rep. — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: New Zealand — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 3 Problem no.: _____

Juror: X. VATERLAUS Signature: X. Valvelaus

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: CZ — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — /

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — /

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: New Zealand — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — /

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — /

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 3 Problem no.: 13

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Lucy Thomas UK — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Daniel Sterba Czech Republic — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Ivan Jin New Zealand — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Chocolate

Scoring Guidelines

Fight (Round no.): 3 Room: 14 Stage: _____ Problem no.: 17

Juror: W. Meevas Cma Signature: WM

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK 5

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Czech 5

Physics ±3 1 ~~1.5~~

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: NZ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 3 Problem no.: 17

Juror: Declan Alvaro Signature: Alvaro

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Czech Rep — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: NZ — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 3 Problem no.: 17

Juror: M KUNESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −0.5

- ☐ Quality of experimental technique(s) −1
- ☐ Structure +0.5
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Czech Rep — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: NZ — 5

Physics ±3 +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 2 Problem no.: 1

Juror: Declan Alvarez Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: New Zealand — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: UK — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 +0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: South Korea — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: ~~8~~ 2 Problem no.: 1

Juror: KUNDRACK Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NEW ZEALAND — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: UK — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: CZECH REP. — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 2 Problem no.: 1

Juror: M KUNESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: New Zealand — 5

Physics ±3 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: UK — 5

Physics ±3 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Czech Rep. — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Invent yourself 1

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: _____ Problem no.: _____

Juror: W. MEEVASANA Signature: W-M-

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NZ Sat Liv — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: UK — 5

Physics ±3 — −

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Czech — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 2 Problem no.: 1

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Scott Lia, New Zealand — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 9

Opp.: Ilya Lapan, UK — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Jan Mazač, Czech Republic* — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: 11 Stage: 2 Problem no.: _____

Juror: X. VATERLAUS Signature: X. Vaterlaus

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: New Zealand — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 9

Opp.: UK — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 9

Rev.: CZ — 5

Physics ±3 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 1 Problem no.: 14

Juror: M KUNESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Rep. — 5

Physics ±3 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: New Zealand — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: UK — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — ~~0.5~~ -0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 1 Problem no.: 14

Juror: Declan Alvarez Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Rep. 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: NewZealand 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: UK 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: _____ Problem no.: 14

Juror: W. Meevissens Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech.

5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

-0.5

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: NZ

5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

+0.5

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: UK

5

Physics ±3 -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 4.5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 1 Problem no.: _____

Juror: X. VATERLAUS Signature: X. Vaterlaus

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Republ. — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: New Zealand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: UK — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 1 Problem no.: 14

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Dalibor Repcek Czech Republic — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Luke Porteous New Zelas ~~UK~~ — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Gemma Ting UK ~~New Zelas~~ — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 1 Problem no.: 14

Juror: KUNDRATIC Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CZECH R [illegible]

5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter 5

Opp.: NEW ZEALAND [illegible]

5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0,3

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: UK [illegible]

5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 3 Room: H Fight Assistants: Song Jinghan

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Czech Republic	New Zealand	United Kingdom	New Zealand	United Kingdom	Czech Republic	United Kingdom	Czech Republic	New Zealand			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Frantisek Kundracik	5	6	6	7	7	7	5	7	7			
Andreas Vaterlaus	6	5	4	9	9	9	5	6	6			
Dmitrii Agarkov	4	4	5	9	7	8	5	7	6			
Worawat Meevasana	3	5	5	5	5	7	5	7	7			
Declan Alvaro	5	7	7	8	7	6	~~5~~ 6	7	6			
Markus Kunesch	4	7	5	6	4	7	5	5	8			
Acting Team Member	Dalibor Repček	Luke Porteous	~~Gemma~~ Transi ~~Fiwa~~ Jing	Scott Liu	Ilya Lopan	Jan Mazáč	Lucy Thomas	Daniel Štěrba	Ivan Jin.			
Rejected Problems												
Accepted Problem	14. Rubber motor			1. Invent yourself			17. Chocolate hysterisis					

Signature Fight Assistant: Song Jinghan Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 1 Problem no.: 15

Juror: Kyu MARCHENKO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Austria — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: China — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Ukraine — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 1 Problem no.: 15

Juror: R M TOCKNELL Signature: R M Tocknell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Austria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: China — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 1 Problem no.: 15

Juror: SUE NAPIER Signature: S Napier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Austria Vanessa Maynard — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: China — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): III Room: I Stage: 1 Problem no.: 15

Juror: DAGMAR PANOŠOVÁ Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Au — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,25

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,75

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Chi — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Nkr — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 1 Problem no.: 15

Juror: JENEI PETER Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AUSTRIA — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: CHINA — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: UKRAINE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 1 Problem no.: ____

Juror: A. NADOLNY Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ____ 5

Physics ±3 ____

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ____

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 ____

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: ____ 5

Physics ±3 ____

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ____

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 ____

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: ____ 5

Physics ±3 ____

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ____

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 ____

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: 1 Stage: 2 Problem no.: 8

Juror: Olga MARTCHENKO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Austria — 5

Physics ±3 — +3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 10

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 2 Problem no.: 8

Juror: SUE NAPIER Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China Zhao Yixuan

5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Ukraine

5

Physics ±3 0 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0 -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

5.

Final Grade: Opponent 4

Rev.: Austria

5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 2 Problem no.: 8

Juror: R M TOCKWELL Signature: R M Tockwell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Austria — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): III. Room: I. Stage: 2. Problem no.: 8

Juror: ŽAGMAR PANOŠOVÁ Signature: Panošová

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Chi — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Ubr — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Aw — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0,5

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 2 Problem no.: 8

Juror: PETER JENEI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CHINA — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: UKRAINE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: AUSTRIA — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 3 Problem no.: 5

Juror: Olga MARTCHENKO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Austria — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 9

Rev.: China — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 3 Problem no.: 5

Juror: R M TOCKNELL Signature: RM Tocknell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Austria — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: China — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 3 Problem no.: 5

Juror: SUE NAPIER Signature: SNapier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression — Very quiet.

Reporter ±1 -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **4**

Opp.: Austria Paul Worm — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: China — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Scoring Guidelines

Fight (Round no.): III. Room: I. Stage: 3. Problem no.: 5

Juror: DAGMAR PANOŠOVÁ Signature: Panošová

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nov. — 5

Physics ±3 −1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter ±1 −0,5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **3**

Opp.: Ana — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☑ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Mi — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **6**

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 3 Problem no.: 5

Juror: PETER JENDI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UKRAINE — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: AUSTRIA — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: ~~CHINA~~ CHINA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 3 Room: I Stage: 3 Problem no.: 5

Juror: A. NADOLNY Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 3 Room: 1 Fight Assistants: Ruizhi Zuo

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Austria	China	Ukraine	China	Ukraine	Austria	Ukraine	Austria	China			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Ilya Martchenko	8	6	6	6	5	10	5	9	5			
Mark Tocknell	6	7	5	8	5	6	5	7	8			
Susan Napier	7	6	5	8	5	5	4	7	7			
~~Lat Meng Chan~~ Dagmar Šanošová	6	6	5	6	5	4	3	7	6			
Peter Jenei	8	7	5	7	5	6	4	7	6			
Andrzej Nadolny	6	7	6	8	5	8	3	7	8			
Acting Team Member	Vanessa Majnaric	Yixiu Zhao	Borys Soloviov	Yixiu Zhao	Oleksii Kosobutskyi	Paul Worm	Danylo Varushchyk	Paul Worm	Yan Liang			
Rejected Problems							1 17. 2					
Accepted Problem	15.			8			5					

Signature Fight Assistant:..... Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 3 Problem no.: 17

Juror: Asger Kyndlev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — Franziska Aspegren — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter: 5

Opp.: Slovakia — Jacub Chudik — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1: +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent: 6

Rev.: Thailand — Kittirat — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer: 5

Scoring Guidelines

Fight (Round no.): 3 Room: 5 Stage: B Problem no.: 17

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 -1 → -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 → 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0.5 → 0.5

- ☑ Quality of experimental technique(s) (too little?)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Slovakia — 5

Physics ±3 +1 → 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 → 0

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1 → 1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Thailand — 5

Physics ±3 0 → 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 → 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5 → 0.5

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 3 Problem no.: 17

Juror: O Ivisheva Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 — −1

- ☐ Correct and relevant physics −
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable +
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s) +
- ☐ Structure +
- ☐ Explanation of formulae and symbols −
- ☐ Appropriate models, conformity of dimensions −
- ☐ Slides, on-site experiments, audio, video, as appropriate +
- ☐ References, proper citations of ideas and input of others −
- ☐ Novelty of the report −
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Slovakia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics +
- ☐ Scientific approach +
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable +
- ☑ Appropriate manner +
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution +
- ☑ Shows the strong and weak points of the report +
- ☑ Finds shortcomings or errors in the report +
- ☐ Relevance of the questions +
- ☑ Contribution to the discussion +

Final Grade: Opponent — 8

Rev.: Thailand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable +
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☑ Provides a thorough review of report and discussion +
- ☐ Expresses own opinion about topics presented or discussed −
- ☑ Relevance of questions to both the reporter and the opponent +
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 3 Problem no.: 17

Juror: L. Croxford Signature: LC

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 — −½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −½

- ☐ Clear and understandable —
- ☐ Appropriate manner ✓
- ☐ Overall impression

Reporter ±1 — +½

- ☐ Quality of experimental technique(s) ✓
- ☐ Structure —
- ☐ Explanation of formulae and symbols —
- ☐ Appropriate models, conformity of dimensions —
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Slovakia — 5

Physics ±3 — ½

- ☐ Correct and relevant physics ✓
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — ½

- ☐ Clear and understandable ✓
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Thailand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — ½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — ½

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 3 Problem no.: ____

Juror: H.C. KAO Signature: Hsien-chung Kao

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 — −1.2

- [−] Correct and relevant physics
- [−] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.2

- [ ] Clear and understandable
- [ ] Appropriate manner
- [+] Overall impression

Reporter ±1 — +0.2

- [+] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Slovakia — 5

Physics ±3 — +0.5

- [+] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.2

- [ ] Clear and understandable
- [ ] Appropriate manner
- [+] Overall impression

Opponent ±1 — +0.2

- [+] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Thailand — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +0.2

- [+] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 3 Problem no.: 17

Juror: Hugo MARRocHio Signature: Hugo Marrocchio

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions −0.5
- ☑ Accurate answers −0.5

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☑ Quality of experimental technique(s) +1
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Slovakia — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Thailand — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 2 Problem no.: 5

Juror: Assen Kyuldjiev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand
Taylor Yan — 5

Physics ±3
- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.2
- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.7
- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Sweden
Sabrina Yue Wang — 5

Physics ±3
- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1
- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1
- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Slovakia
Mario Lipovsky — 5

Physics ±3
- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5
- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5
- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 2 Problem no.: ____

Juror: H.C. KAO Signature: Hsien-chung Kao

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 — −1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — +0.3

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Reporter ±1 — +0.6

- [x] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Sweden — 5

Physics ±3 — −1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — +0.3

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Opponent ±1 — −0.4

- [x] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Slovakia — 5

Physics ±3 — −0.2

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +0.4

- [x] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 2 Problem no.: 5

Juror: L. Crawford Signature: TSL

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Sweden — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Slovakia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 2 Problem no.: 5

Juror: Hugo MARROCHE Signature: Hugo Marroche

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols + ^
- ☑ Appropriate models, conformity of dimensions ○
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **8**

Opp.: Sweden — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Slovakia — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **6**

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 2 Problem no.: 5

Juror: Olnisheva Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 +2

- [x] Correct and relevant physics +
- [x] Scientific approach +
- [x] Validity of conclusions +
- [ ] Accurate answers ±

Presentation ±1 +1

- [x] Clear and understandable +
- [x] Appropriate manner +
- [ ] Overall impression

Reporter ±1 +0,5

- [ ] Quality of experimental technique(s) −
- [x] Structure ±
- [x] Explanation of formulae and symbols +
- [x] Appropriate models, conformity of dimensions +
- [x] Slides, on-site experiments, audio, video, as appropriate +
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [x] Contribution to the discussion +

Final Grade: Reporter **8**

Opp.: Sweden — 5

Physics ±3 +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0,5

- [x] Clear and understandable +
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 +0,5

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [x] Contribution to the discussion +

Final Grade: Opponent **7**

Rev.: Slovakia — 5

Physics ±3 +1

- [x] Correct and relevant physics +
- [ ] Scientific approach
- [x] Validity of conclusions +
- [ ] Accurate answers

Presentation ±1 +0,5

- [x] Clear and understandable +
- [ ] Appropriate manner
- [x] Overall impression

Reviewer ±1 +0,5

- [x] Provides a thorough review of report and discussion +
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent +

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Scoring Guidelines

Fight (Round no.): 3 Room: 5 Stage: 2 Problem no.: 5

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 1 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1 — 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 0.5 — 0.5

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Sweden — 5

Physics ±3 −1 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 — 0

- ☑ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 −0.5 — −0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: Slovakia — 5

Physics ±3 0 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 1 Problem no.: 4

Juror: Assen Kyuldjiev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ____ 5

Physics ±3 -0.6

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.3

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: ____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: ____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 1 Problem no.: 7

Juror: O. Iwisheva Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☑ Clear and understandable +
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0,5

- ☐ Quality of experimental technique(s)
- ☑ Structure +
- ☑ Explanation of formulae and symbols +
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate +
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion +

Final Grade: Reporter — 6

Opp.: Thailand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable +
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution +
- ☑ Shows the strong and weak points of the report +
- ☑ Finds shortcomings or errors in the report +
- ☑ Relevance of the questions +
- ☑ Contribution to the discussion +

Final Grade: Opponent — 6

Rev.: Sweden — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable +
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☑ Provides a thorough review of report and discussion +
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent +

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 1 Problem no.: 7

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 0 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0.5 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Thailand — 5

Physics ±3 0.5 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0.5 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

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Final Grade: Opponent — 5

Rev.: Sweden — 5

Physics ±3 1 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 3 Room: 1 Stage: 1 Problem no.: 7

Juror: T. Croxford Signature: TSC

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Thailand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Sweden — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 3 Room: J Stage: 1 Problem no.: 7

Juror: H.C. KAO Signature: Hsien-chung Kao

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 +0.8

+ ☐ Correct and relevant physics
☐ Scientific approach
+ ☐ Validity of conclusions
− ☐ Accurate answers

Presentation ±1 +0.6

+ ☐ Clear and understandable
☐ Appropriate manner
+ ☐ Overall impression

Reporter ±1 +0.3

− ☐ Quality of experimental technique(s)
+ ☐ Structure
☐ Explanation of formulae and symbols
☐ Appropriate models, conformity of dimensions
☐ Slides, on-site experiments, audio, video, as appropriate
☐ References, proper citations of ideas and input of others
+ ☐ Novelty of the report
☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Thailand — 5

Physics ±3 −0.2

− ☐ Correct and relevant physics
☐ Scientific approach
− ☐ Validity of conclusions
+ ☐ Accurate answers

Presentation ±1 0

+ ☐ Clear and understandable
☐ Appropriate manner
− ☐ Overall impression

Opponent ±1 −0.5

− ☐ Response to the reporter's solution
☐ Shows the strong and weak points of the report
☐ Finds shortcomings or errors in the report
☐ Relevance of the questions
− ☐ Contribution to the discussion

Final Grade: Opponent **4**

Rev.: Sweden — 5

Physics ±3 +1

+ ☐ Correct and relevant physics
☐ Scientific approach
+ ☐ Validity of conclusions
☐ Accurate answers

Presentation ±1 0

− ☐ Clear and understandable
☐ Appropriate manner
+ ☐ Overall impression

Reviewer ±1 +0.6

+ ☐ Provides a thorough review of report and discussion
+ ☐ Expresses own opinion about topics presented or discussed
+ ☐ Relevance of questions to both the reporter and the opponent
☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer **7**

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Revised after IOC feedback and approved by EC on 2011-11-03

3

Scoring Guidelines

Fight (Round no.): 3 Room: 5 Stage: 1 Problem no.: 7

Juror: Hugo MARROCHIO Signature: Hugo Marrochio

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Thailand — 5

Physics ±3 -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☒ Appropriate manner -0.3
- ☒ Overall impression -0.5

Opponent ±1 -1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report -0.5
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions -0.5
- ☐ Contribution to the discussion

Final Grade: Opponent **3**

Rev.: Sweden — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **5**

Round: 3 Room: J Fight Assistants: 杨鹏宇 Pengyu Yang

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	SK	TH	SE	TH	SE	SK	SE	SK	TH			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Assen Kyuldjiev	4	5	5	4	5	6	5	6	5			
David Kell	6	5	7	8	4	6	5	7	6			
Olga Inisheva	6	6	7	8	7	7	5	8	6			
Tim ~~[illegible]~~ Croxford	7	5	7	8	8	6	5	6	6			
Hugo Marrochio	7	3	5	8	7	6	~~4~~ 5	8	8			
Hsien-Chung Kao	7 ~~Natália~~	4	7	5	4	5	4	6	5			
Acting Team Member	Natália Ružičková	Pawn Taechayotin	Daniel Jacobsson	Taylor Yan	Salorina Yue Wang	MĀRIOLIPO VSCÝ	Frusitka Aspeqeen	Jalcub Chndík	Aroonrenn Kittiat			
Rejected Problems												
Accepted Problem	7			5			17					

Signature Fight Assistant: 杨鹏宇 Pengyu Yang Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 1 Problem no.: 8

Juror: Sze Guan Kheng Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: UAE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Nigeria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 1 Problem no.: 8

Juror: V. Astashynski Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +2

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 9

Opp.: UAE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Nigeria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent (–)
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 1 Problem no.: 8

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 1 — 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0.5 — 0.5

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: United Arab Emirate — 5

Physics ±3 0 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −0.5 — −0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report (one of this)
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Nigeria — 5

Physics ±3 1 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 1 Problem no.: 8

Juror: Hugo MARRochio Signature: Hugo Marrochio

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: RUSSIA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: United Arab Emirate — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☑ Appropriate manner – 1
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 3

Rev.: NIGERIA — 5

Physics ±3 — -1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent –1
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 2

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 1 Problem no.: 8

Juror: Fang Sing Signature: Fang Sing

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 +0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 3

Rev.: 5

Physics ±3 +0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Scoring Guidelines

Fight (Round no.): 4 Room: X Stage: 1 Problem no.: 8

Juror: X. VATIERLXUS Signature: X. Vatierlxus

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Unl. Xib. Em. — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 3

Rev.: Nigeria — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 2 Problem no.: 5

Juror: Feng Song Signature: Feng Song

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 -1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☒ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 +0.6

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: _____ 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -.

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 2 Problem no.: 5

Juror: X. VATERLXUS Signature: X. Vaterlxus

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3: -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: -½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1: -½

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 2

Opp.: 5

Physics ±3: -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1: 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: 5

Physics ±3: -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1: 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: F2 Problem no.: 5

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: United Arab Emirates — 5

Physics ±3 −2.5 → −2.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 → 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −1 → −1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter → 2

Opp.: Nigeria — 5

Physics ±3 −1 → ~~−1~~ 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 → 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −0.5 → ~~−1~~

- ☒ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

too much own work

Final Grade: Opponent → ~~5~~

Rev.: Macao — 5

Physics ±3 −1 → −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5 → 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5 → 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer → 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 2 Problem no.: 5

Juror: Hugo Marrocho Signature: Hugo Marrocho

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Nigeria — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: MACAO — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: _____ Problem no.: 5

Juror: Sze Guan Khong Signature: _____

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — −2

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Nigeria — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Macau — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 2 Problem no.: 5

Juror: V. Astashynski Signature: B.R.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -1

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -1

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0

- [?] Quality of experimental technique(s)
- [x] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Nigeria — 5

Physics ±3 — +0,1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +0,1

- [ ] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Macao — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +0,5

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 3 Problem no.: 14

Juror: Feng Song Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 +0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: _____ 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 4 Room: X Stage: 3 Problem no.: 14

Juror: X. VATERLAUS Signature: X. Vaterlaus

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 2

Opp.: 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 3

Rev.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 3 Problem no.: 14

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 −1 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 − 0.5 — −0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: Macao — 5

Physics ±3 0 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 — 0

- ☐ Clear and understandable
- ☒ Appropriate manner not really repectful enough
- ☐ Overall impression

Opponent ±1 1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Russia — 5

Physics ±3 1 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 3 Problem no.: 14

Juror: HUGO MARCOCCHIA Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — −3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: MACAO — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: RUSSIA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 3 Problem no.: 14

Juror: Sze Guan Kheng Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — -2

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Macau — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: ~~UAE~~ Russia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 3 Problem no.: 14

Juror: V. Astashynski Signature: B

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — -1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0

- [ ] Quality of experimental technique(s)
- [x] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Macao — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Russia — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0

- [ ] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 4 Problem no.: 7

Juror: V. Astashynski Signature: B. A

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — -1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Russia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: ~~Hungary~~ UAE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 4 Problem no.: 7

Juror: Sze Gwan Khong Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macau — 5

Physics ±3 — -1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Russia — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: UAE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 4 Problem no.: 7

Juror: Hugo Marrocchi Signature: Hugo Marrocchi

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: MACAO — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: RUSSIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: UAE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 4 Problem no.: 7

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 −1 → −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 → 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −0.5 → −0.5

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols (weren't any!)
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report 4/5
- ☐ Contribution to the discussion

Final Grade: Reporter → 4

Opp.: Russia — 5

Physics ±3 2 → 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 → 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.5 → 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent → 8

Rev.: United Arab Emirates — 5

Physics ±3 −1.5 → −1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −0.5 → 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 −0.5 → −0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer → 4

Scoring Guidelines

Fight (Round no.): 4 Room: X Stage: 4 Problem no.: 7

Juror: X. VATERLAUS Signature: X. Vaterlaus

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Russia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1/2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Un Xiao Emil — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 4 Problem no.: 7

Juror: Feng Sing Signature: Feng Sing

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: _____ 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3 +0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Round: 4 Room: A Fight Assistants: Zixi Jia

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Russia	United Arb Emirate	Nigeria	United Arb Emirate	Nigeria	Macao	Nigeria	Macao	Russia	Macao	Russia	United Arb Emirate
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Feng Song	7	3	5	4	5	6	4	6	7	4	6	5
Andreas Vaterlaus	7	3	3	2	4	3	2	3	7	6	7	7
David Kell	7	5	7	2	5	5	3	7	7	4	8	4
Hugo Marrochio	8	3	2	3	5	5	2	6	8	3	7	5
Guan Kheng Sze	8	4	5	3	5	6	2	4	7	3	6	5
Valiantsin Astashynski	9	4	5	3	5	6	4	5.	5	4	6	5
Acting Team Member	Matiunin Vitalii	KARAN KUMAR	Jim Omoigberale	Nikhil Srinivasula	Jim Omoigberale	Alexandra Santos.	Ibrahim Kabir	Herman Lai	Doronin Roman	~~Lok~~ ~~Teong~~ Leong Lok Jong	Vi-lalii Matiunin	Lloya Adams.
Rejected Problems	X						X			X		
Accepted Problem	8			5			14			7		

Signature Fight Assistant: Zixi Jia. Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 1 Problem no.: 7

Juror: Kathryn Zealand Signature: K Zealand

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Andrea — 5

Physics ±3 — -1½

- ☑ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -½

- ☒ Quality of experimental technique(s) more trails, parameters and control needed
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Stanley — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☒ Appropriate manner – be nice!!
- ☑ Overall impression

I like your tie.

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report very vague
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Cinh — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 1 Problem no.: 7

Juror: Thomas Lindner Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — /

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: New Zealand — 5

Physics ±3 — /

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Hungary — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — /

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 1 Problem no.: 7

Juror: TATYANA Signature: Tatyana G.S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 -1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **3**

Opp.: New Zeland — 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Hungary — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **5**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 1 Problem no.: 7

Juror: R M TOCKNELL Signature: R M Tocknell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: New Zealand — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Hungary — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 1 Problem no.: 7

Juror: Iryna MARCHENKO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 — −2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: New Zealand — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Hungary — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 1 Problem no.: 7

Juror: Assen Kyuldjiev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points.***
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: 5

Physics ±3 +0.7

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.6

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.6

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 2 Problem no.: 6

Juror: Kathryn Zealand Signature: KZealand

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Fran — 5

would have liked some predictive theory.

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

great explanations

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Armin — 5

Physics ±3 — −½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — ½

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Anca — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −½

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 2 Problem no.: 6

Juror: TATYANA Signature: Tatyana G.S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: New Zeland — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Hungary — 5

Physics ±3 -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0,5

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Romania — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 2 Problem no.: 6

Juror: Thomas Lindner Signature: Thomas Lindner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NZ — 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 /

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Hungary — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Romania — 5

Physics ±3 -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 2 Problem no.: 6

Juror: R M TOCKWELL Signature: R M Tockwell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: New Zealand — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — +1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Hungary — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Romania — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 2 Problem no.: 6

Juror: Assan Kyulafjiev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: _____ 5

Physics ±3 −0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 −0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 2 Problem no.: 6

Juror: Kya MARTCHENKO Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: New Zealand — 5

Physics ±3 — 4/4 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Hungary — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Romania — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 3 Problem no.: 1

Juror: Kathryn Zealand Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter and opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Zeno — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −½

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Horia — 5

Physics ±3 — −1½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −½ — 0

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

~~3.5~~ 4.3

Final Grade: Opponent — 4.3

Rev.: Scott — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

know who is the reporter ☺

Reviewer ±1 — +½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 3 Problem no.: 1

Juror: Thomas Lindner Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Romania — 5

Physics ±3 — /

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: NZ — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 3 Problem no.: 1

Juror: Assen Ilyuldjiev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 -1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 2

Opp.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.3

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.4

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 3 Problem no.: 1

Juror: Ilya MARTCHENKO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Romania — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: New Zealand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 3 Problem no.: 1

Juror: R M TOCKNELL Signature: R M Tocknell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — 0

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Reporter ±1 — −1

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Romania — 5

Physics ±3 — 0

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — −1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [ ] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 4

Rev.: New Zealand — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [x] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: C Stage: 3 Problem no.: 01

Juror: TATYANA Signature: Tatyana G.S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5 — -1

- ☒ Quality of experimental technique(s) — 2 SET UPS
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Romania — 5

Physics ±3 — -0,8

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: New Zealand — 5

Physics ±3 — +1.5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Round: 4 Room: C Fight Assistants: Wang Jin

	Stage 1			Stage 2			Stage 3			Stage 4		
Team												
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Ilya Martchenko	3	7	7	7	5	4	5	4	7			
Mark Tocknell	2	8	8	8	5	4	5	4	8			
Assen Kyuldjev	3	7	6	4	5	4	2	6	8			
Thomas Lindner	3	6	4	6	5	4	4	4	8			
Tatyana Gonçalves Stankevicius	3	7	5	6	5	5	3	4	8			
Kathryn Zealand.	3	8	5	6	5	4	3	3	8			
Acting Team Member	Andreea Oncsesa	Stanley Sarkies	Linh Pham Thi.	Francesca Templey	Armin Beda.	ANCA GOLDIS.	Zeno Madarasz	Horia. Magureani	Scott LIM.			
Rejected Problems												
Accepted Problem	7			6			1					

Replace lat Neng Chan.

missing in the database.

Signature Fight Assistant: Wang Jin Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 3 Problem no.: 11

Juror: PETER JENNI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: THAILAND — 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: SWITZERLAND — 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 3 Problem no.: 11

Juror: [illegible] Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: GB — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.25

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: TH — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: CH — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 3 Problem no.: 11

Juror: Leszek Głodzik Signature: L Głodzik

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: 5

Physics ±3 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 3 Problem no.: 11

Juror: Chuan Yong Li Signature: Chuan Yong Li

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Thailand — 5

Physics ±3 — +0.5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Swiss — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: 2 Stage: 3 Problem no.: 11

Juror: YL YLO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: United Kingdom — 5

Physics ±3 ±½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ±½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Thailand — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Switzerland — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 3 Problem no.: 11

Juror: SUE NAPIER Signature: SNapier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK Jon Yeung

5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Didn't finish.

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Thailand

5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers 0

Presentation ±1 ~~0~~ 5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression 0

Opponent ±1 ~~0~~ 5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent ~~4~~ 5

Rev.: Switzerland

5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 2 Problem no.: 5

Juror: PETRA JENEI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SWITZERLAND — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: UK — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 9

Rev.: THAILAND — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 2 Problem no.: 5

Juror: KREN ZADRO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CA — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: GB — 5

Physics ±3 1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.25

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: TH — 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 2 Problem no.: 5

Juror: Lassel Gladerich Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 — 0

- ✓ ☐ Correct and relevant physics
- – ☐ Scientific approach
- – ☐ Validity of conclusions
- ✓ ☐ Accurate answers

Presentation ±1 — 0.5

- ✓ ☐ Clear and understandable
- ✓ ☐ Appropriate manner
- ✓ ☐ Overall impression

Reporter ±1 — 0.5

- – ☐ Quality of experimental technique(s)
- ✓ ☐ Structure
- ✓ ☐ Explanation of formulae and symbols
- ✓ ☐ Appropriate models, conformity of dimensions
- ✓ ☐ Slides, on-site experiments, audio, video, as appropriate
- ✓ ☐ References, proper citations of ideas and input of others
- ✓ ☐ Novelty of the report
- ? ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: United King — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Thailand — 5

Physics ±3 — 0.5

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 2 Problem no.: 5

Juror: SUE NAPIER Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: UK (Dominic) — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Thailand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 2 Problem no.: 5

Juror: YE YEO Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: United Kingdom — 5

Physics ±3 — +1½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Thailand — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 2 Problem no.: 5

Juror: Chuangxin Li Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Swiss — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: UK — 5

Physics ±3 — +2

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Thailand — 5

Physics ±3 — +2

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 1 Problem no.: 16

Juror: Iren 2012 Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: TA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: CA — 5

Physics ±3 — -0.25

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: GB — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 1 Problem no.: 16

Juror: Leszek Głodziuk Signature: L. Głodziuk

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: _____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: I Problem no.: 16

Juror: YE YEO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Switzerland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: United Kingdom — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 1 Problem no.: 16

Juror: SUE NAPIER Signature: SNapier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand Suramon Chaichon — 5

Physics ±3 +0.5

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 +0.5

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [x] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter 6

Opp.: Switzerland Lioba Heimbach — 5

Physics ±3 +0.5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 +0.5

- [x] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent 6

Rev.: UK Ilya Lopez — 5

Physics ±3 +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 0

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 1 Problem no.: 16

Juror: PETER JENEI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: THAILAND — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: SWITZERLAND — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: UK — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 1 Problem no.: 16

Juror: Chun Yong Li Signature: Chunyong Li

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 +0.5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Swiss — 5

Physics ±3 +0.5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: UK — 5

Physics ±3 +0.5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 4 Room: D Fight Assistants: Zheng Yu

Team	Stage 1			Stage 2			Stage 3			Stage 4		
	~~Thailand~~ Finland	Switzerland	United Kingdom	Switzerland	United Kingdom	Thailand	United Kingdom	Thailand	Switzerland			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Chuantong Li	6	6	6	7	8	8	6	6	7			
Susan Napier	6	6	6	7	6	5	7	5	7			
Ye Yeo	6	5	7	4	7	6	6	6	7			
Peter Jeneš	5	6	5	5	9	5	6	7	6			
Leszek Gołdaczuk	6	6	6	6	7	7	6	6	9			
Kreso Zadro	5	4	8	6	7	6	6	6	7			
Acting Team Member	Soraman Chaichan	Liora Kembach	Ilya Lapon	Michael Rosenmoser	Dominic Dodson	Taylor Yan	Ian Yeung	Soraman Chaichan	Trevor McCants			
Rejected Problems				17. Candle Power Plants								
Accepted Problem	16. Magnetic brakes			3. Loaded hoop			11. Candle Power Plants					

Signature Fight Assistant:..... Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 1 Problem no.: 12

Juror: Kim F Signature: [redacted]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Brazil — 5

Physics ±3 — 1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Czech Rep. — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 1 Problem no.: 12

Juror: S MARTIN Signature: S Martin

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions — comprehensive description level.
- ☑ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — ½

- ☑ Quality of experimental technique(s)
- ☑ Structure — V. good.
- ☑ Explanation of formulae and symbols — rather quick.
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, ~~on-site experiments, audio~~, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Brazil — 5

Physics ±3 — −½

- ☐ Correct and relevant physics
- ☐ Scientific approach — in places just
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −½

- ☐ Clear and understandable
- ☐ Appropriate manner — disjointed.
- ☒ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report — only just.
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions — not all good.
- ☑ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Czech Rep. — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — 0

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

cold balloon

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 1 Problem no.: 12

Juror: Nirut Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Brazil — 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Czech — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 1 Problem no.: 12

Juror: MATEV Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Brazil — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Czech Rep. — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0.5

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: _____ Stage: 1 Problem no.: 12

Juror: FRANCE EKWUGHTA Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Brazil — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Czech Republic — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 1 Problem no.: 12

Juror: Chan Oung Park Signature: Chan Oung Park

#12 X, #14 X,

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 +1.5

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☑ Appropriate manner +0.5
- ☐ Overall impression

Reporter ±1 0 ~~+0.5~~

- ☑ Quality of experimental technique(s) ~~+0.5~~
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Brazil — 5

Physics ±3 +1.5

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0.5

- ☑ Response to the reporter's solution -0.5
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: Czech Rep — 5

Physics ±3 +1.0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☑ Appropriate manner +0.5
- ☐ Overall impression

Reviewer ±1 +0.5

- ☑ Provides a thorough review of report and discussion +0.5
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 2 Problem no.: 16

Juror: Kim F Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Czech Rep — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Slovakia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 2 Problem no.: 16

Juror: S MARTIN Signature: SMartin

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Br — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 +½

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, ~~on-site experiments~~, ~~audio~~, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Cz — 5

Physics ±3 +½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 +½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Slovakija — 5

Physics ±3 +½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 0

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

magnetic brake

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 2 Problem no.: 16

Juror: Nirut Signature: Nirut

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Czech — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Slovakia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 —

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 2 Problem no.: 16

Juror: MATEV Signature: VMatev

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — 1

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Czech. Rep. — 5

Physics ±3 — 0.5

- [ ] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Opponent ±1 — 0.5

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Slovakia — 5

Physics ±3 — 0.5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0.5

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 2 Problem no.: 16

Juror: Francis Rukwenta Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Czech Republic 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Slovakia 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 2 Problem no.: 16

Juror: Chan Chung Park Signature: Chan Chung Park

#15(x), #6(x), #9(x), #5(x)

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — 5

Physics ±3 — −2.0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Czech Rep. — 5

Physics ±3 — −1.0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Slovakia — 5

Physics ±3 — −1.0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −0.5

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☑ Provides a thorough review of report and discussion +0.5
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 3 Problem no.: 4

Juror: Kim F Signature: [redacted]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Rep — 5

Physics ±3 — -1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Slovakia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Brazil — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 3 Problem no.: 4

Juror: S MARTIN Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Cz — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

as expected

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

-ish

Final Grade: Reporter — 5

Opp.: Slov. — 5

Physics ±3 — +½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Br. — 5

Physics ±3 — +½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

ball sound

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 3 Problem no.: 4

Juror: Nirut Signature: Nirut

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 —

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Slovakia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 —

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Brazil — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 —

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 3 Problem no.: 4

Juror: MATEV Signature: M Matev

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Rep. — 5

Physics ±3 — -0.5

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Slovakia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Brazil — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 3 Problem no.: 4

Juror: FRANCIS BKWENTO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Republic — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **5**

Opp.: Slovakia — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **5**

Rev.: Brazil — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: E Stage: 3 Problem no.: 4

Juror: Chan Ong Park Signature: Chan Ong Park

#3(X), #11(X), #14)

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Rep — 5

Physics ±3 — +1.0

- [x] Correct and relevant physics
- [ ] Scientific approach −1.0
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Slovakia — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.5

- [ ] Clear and understandable
- [x] Appropriate manner +0.5
- [ ] Overall impression

Opponent ±1 — +0.5

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Brazil — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.5

- [ ] Clear and understandable
- [x] Appropriate manner +0.5
- [ ] Overall impression

Reviewer ±1 — +0.5

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 4 Room: E Fight Assistants: Fanglin Liu

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Slovakia	Brazil	Czech Republic	Brazil	Czech Republic	Slovakia	Czech Republic	Slovakia	Brazil			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Kim Freimann	5	7	5	4	4	7	3	5	6			
Steve Martin	7	4	5	7	6	6	5	7	6			
Nirut Pissadee	5	6	5	6	6	6	4	6	6			
Mladen Matev	6	5	6	8	7	6	4	7	6			
Francis Ejike Ekwenta	7	7	7	6	6	6	5	5	7			
Chan Dung Park	7	6	7	3	4	4	4	6	6			
Acting Team Member	Jakub Anuchk.	Lucas Levy	Daniel Štěrba	Giovani Cestto	Daniel Štěrba	Matej Bedin	Tomáš Lamich	Mávio Lipovsky	Giovani Ceotte			
Rejected Problems	14. 17			4. 5. 9. 15			3. 11					
Accepted Problem	12			16			4					

Signature Fight Assistant: Fanglin Liu Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): IV Room: F Stage: 1 Problem no.: 8

Juror: OSTERMAIER Signature: F. Ostermaier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Singapore — 5

Physics ±3 — +1,25

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Poland — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 1 Problem no.: 8

Juror: O. Iuisheva Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 −0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach −
- ☐ Validity of conclusions −
- ☐ Accurate answers

Presentation ±1 +0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,5

- ☑ Quality of experimental technique(s) +
- ☐ Structure
- ☑ Explanation of formulae and symbols +
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate +
- ☑ References, proper citations of ideas and input of others +
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **6**

Opp.: Singapore — 5

Physics ±3 +2

- ☑ Correct and relevant physics +
- ☑ Scientific approach +
- ☑ Validity of conclusions +
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☑ Response to the reporter's solution +
- ☑ Shows the strong and weak points of the report +
- ☑ Finds shortcomings or errors in the report +
- ☑ Relevance of the questions +
- ☑ Contribution to the discussion +

Final Grade: Opponent **8**

Rev.: Poland. — 5

Physics ±3 +0,5

- ☑ Correct and relevant physics +
- ☐ Scientific approach
- ☑ Validity of conclusions +
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed +
- ☑ Relevance of questions to both the reporter and the opponent +
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **6**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 1 Problem no.: 8

Juror: Maslechko A. Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: An. Koglova (Belarus) — 5

Physics ±3 +0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **6**

Opp.: Joel Tan (Singapore) — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Anna Wald (Poland) — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 1 Problem no.: 8

Juror: Jakob Lavrød Signature: Jakolrød

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 9

Rev.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 1. Problem no.: _____

Juror: Craig McDougall Signature: C. McD

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Singapore — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Holland — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reviewer ±1 — +0.5

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 1 Problem no.: 8

Juror: H. C. KAO Signature: Hsien-chung Kao

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 — −0.3

+ ☐ Correct and relevant physics
☐ Scientific approach
− ☐ Validity of conclusions
☐ Accurate answers

Presentation ±1 — +0.2

☐ Clear and understandable
☐ Appropriate manner
+ ☐ Overall impression

Reporter ±1 — +0.4

+ ☐ Quality of experimental technique(s)
+ ☐ Structure
☐ Explanation of formulae and symbols
☐ Appropriate models, conformity of dimensions
☐ Slides, on-site experiments, audio, video, as appropriate
☐ References, proper citations of ideas and input of others
☐ Novelty of the report
☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Singapore — 5

Physics ±3 — +2

+ ☐ Correct and relevant physics
☐ Scientific approach
+ ☐ Validity of conclusions
+ ☐ Accurate answers

Presentation ±1 — +0.5

+ ☐ Clear and understandable
☐ Appropriate manner
+ ☐ Overall impression

Opponent ±1 — +0.5

+ ☐ Response to the reporter's solution
☐ Shows the strong and weak points of the report
☐ Finds shortcomings or errors in the report
☐ Relevance of the questions
+ ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Poland — 5

Physics ±3 — +0.6

+ ☐ Correct and relevant physics
☐ Scientific approach
+ ☐ Validity of conclusions
☐ Accurate answers

Presentation ±1 — +0.2

☐ Clear and understandable
☐ Appropriate manner
+ ☐ Overall impression

Reviewer ±1 — +0.2

+ ☐ Provides a thorough review of report and discussion
☐ Expresses own opinion about topics presented or discussed
☐ Relevance of questions to both the reporter and the opponent
☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): III Room: 1 Stage: 2 Problem no.: 6

Juror: Ostermeier Signature: F. Ostermeier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Poland — 5

Physics ±3 — +2,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Belarus — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 2 Problem no.: 6

Juror: O. Inisheva Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 — +1

- [x] Correct and relevant physics +
- [ ] Scientific approach ±
- [x] Validity of conclusions ±
- [ ] Accurate answers

Presentation ±1 — +0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — +0.5

- [ ] Quality of experimental technique(s)
- [x] Structure +
- [x] Explanation of formulae and symbols +
- [ ] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate +
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Poland — 5

Physics ±3 — +1

- [x] Correct and relevant physics +
- [x] Scientific approach +
- [x] Validity of conclusions ±
- [ ] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable +
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +1

- [x] Response to the reporter's solution +
- [ ] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report +
- [x] Relevance of the questions +
- [x] Contribution to the discussion +

Final Grade: Opponent — 7

Rev.: Belarus — 5

Physics ±3 — +2

- [x] Correct and relevant physics +
- [x] Scientific approach +
- [x] Validity of conclusions +
- [ ] Accurate answers

Presentation ±1 — 0

- [x] Clear and understandable +
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [x] Provides a thorough review of report and discussion +
- [x] Expresses own opinion about topics presented or discussed +
- [x] Relevance of questions to both the reporter and the opponent +
- [x] Draws attention to points missed by the reporter or the opponent +

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 2 Problem no.: 6

Juror: Maslechko a. Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bingjian Li (Singapore) — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Radost Waszkiewicz (Poland) — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Daniil Mnevets (Belarus) — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 2 Problem no.: 6

Juror: Jakob Lavrïd Signature: Jakob Lavrïd

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 2 Problem no.: 6

Juror: Craig McDougall Signature: C. McD

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [ ] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — +1

- [x] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Poland — 5

Physics ±3 — +2

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Belarus — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 0.5

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 2 Problem no.: _____

Juror: H. C. KAO Signature: Hsien-chung KAO

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 +0.5

+ ☐ Correct and relevant physics
☐ Scientific approach
– ☐ Validity of conclusions
☐ Accurate answers

Presentation ±1 +0.5

+ ☐ Clear and understandable
☐ Appropriate manner
☐ Overall impression

Reporter ±1 +0.6

+ ☐ Quality of experimental technique(s)
+ ☐ Structure
☐ Explanation of formulae and symbols
☐ Appropriate models, conformity of dimensions
☐ Slides, on-site experiments, audio, video, as appropriate
☐ References, proper citations of ideas and input of others
☐ Novelty of the report
+ ☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Poland — 5

Physics ±3 +0.7

+ ☐ Correct and relevant physics
☐ Scientific approach
☐ Validity of conclusions
☐ Accurate answers

Presentation ±1 +0.4

☐ Clear and understandable
☐ Appropriate manner
+ ☐ Overall impression

Opponent ±1 0

+ ☐ Response to the reporter's solution
☐ Shows the strong and weak points of the report
☐ Finds shortcomings or errors in the report
☐ Relevance of the questions
– ☐ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: Belarus — 5

Physics ±3 0

☐ Correct and relevant physics
☐ Scientific approach
☐ Validity of conclusions
☐ Accurate answers

Presentation ±1 +0.2

☐ Clear and understandable
☐ Appropriate manner
+ ☐ Overall impression

Reviewer ±1 +0.6

+ ☐ Provides a thorough review of report and discussion
☐ Expresses own opinion about topics presented or discussed
+ ☐ Relevance of questions to both the reporter and the opponent
☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **6**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): IV Room: F Stage: 3 Problem no.: 5

Juror: OSTERMEIER Signature: F. Ostermeier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,25

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Belarus — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Singapore — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 3 Problem no.:

Juror: O. Inisheva Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 — +1

- ☑ Correct and relevant physics +
- ☑ Scientific approach (experiment) –
- ☑ Validity of conclusions +
- ☑ Accurate answers +

Presentation ±1 — +1

- ☑ Clear and understandable +
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s) –
- ☑ Structure +
- ☑ Explanation of formulae and symbols +
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate +
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Belarus — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion +

Final Grade: Opponent — 6

Rev.: Singapore — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 3 Problem no.: 5

Juror: Maslechko O. Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Radoslaw Waszkiewicz (Poland) — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −1

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Daniil Mnevets (Belarus) — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Joel Tan (Singapore) — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 3 Problem no.: 5

Juror: Jakob Lavrød Signature: Jakob Lavrød

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: _____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: _____ 5

Physics ±3 +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 13 Problem no.: 5

Juror: Craig McDougall Signature: C. McDougall

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 +0.5

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 +0.5

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

novelty

Final Grade: Reporter — 7

Opp.: Belarus — 5

Physics ±3 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 0.5

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Singapore — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 0.5

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 4 Room: F Stage: 3 Problem no.: 5

Juror: H. C. KAO Signature: Hsien-chung Kao

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 — -1.2

- ± ☐ Correct and relevant physics
- ☐ Scientific approach
- − ☐ Validity of conclusions
- − ☐ Accurate answers

Presentation ±1 — +0.4

- + ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Reporter ±1 — +0.4

- − ☐ Quality of experimental technique(s)
- + ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- + ☐ Novelty of the report
- + ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Belarus — 5

Physics ±3 — 0

- + ☐ Correct and relevant physics
- → ☐ Scientific approach
- ☐ Validity of conclusions
- → ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.2

- − ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- − ☐ Relevance of the questions
- + ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Singapore — 5

Physics ±3 — +0.5

- + ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.2

- ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Reviewer ±1 — +0.2

- + ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Round: ~~4~~ Room: F Fight Assistants: Yang Cui

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Belarus	Singapore	Poland	Singapore	Poland	Belarus	Poland	Belarus	Singapore			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Florian Ostermaier.	4	7	6	7	8	7	6	5	7			
Olga Inisheva.	6	8	6	7	7	8	8	6	8			
Anastasiia Maslenko	6	7	7	8	7	6	6	6	7			
Jakob Lavad.	5	9	7	6	5	8	5	5	8			
Craig McDonagh.	5	8	6	8	8	8	7	6	7			
Hsien-Chung Kao.	5	8	6	7	6	6.	5	5	6.			
Acting Team Member	Anastasiya. Kozlova	Joel Tan.	Anna Vard.	Bingjian Li	Radosł Waszkiewicz	Daniil Mnevets.	Radosł Waszkiewicz	Daniil Mnevets	Joel Tan.			
Rejected Problems	14. 9.											
Accepted Problem	8.			6.			5.					

Signature Fight Assistant: Yang Cui Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 3 Problem no.: _____

Juror: Lobyshev Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: _____ 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ☐

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: _____ 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G11 Stage: 3 Problem no.: 13

Juror: Max Chalfin Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Croatia — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Germany — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 3 Problem no.: 13

Juror: Felicia Ullstad Signature: Felicia Ullstad

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 — +3

- [+] Correct and relevant physics
- [+] Scientific approach
- [ ] Validity of conclusions
- [+] Accurate answers

Presentation ±1 — 0

- [+] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — +1

- [+] Quality of experimental technique(s)
- [+] Structure
- [+] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [+] Slides, on-site experiments, audio, video, as appropriate
- [+] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Croatia — 5

Physics ±3 — +2

- [+] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0.5

- [ ] Clear and understandable
- [-] Appropriate manner
- [-] Overall impression

Opponent ±1 — +0.5

- [+] Response to the reporter's solution
- [+] Shows the strong and weak points of the report
- [+] Finds shortcomings or errors in the report
- [+] Relevance of the questions
- [+] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Germany — 5

Physics ±3 — +2

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [+] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: 6 Stage: 3 Problem no.: 13

Juror: G.LASKHISHVILI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CH — 5

Physics ±3

- [+] Correct and relevant physics
- [ ] Scientific approach
- [+] Validity of conclusions
- [+] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1

- [+] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [+] Slides, on-site experiments, audio, video, as appropriate
- [+] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter **7**

Opp.: CR — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent **7**

Rev.: GER — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **8**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 3 Problem no.: 13

Juror: Declan Alvarez Signature: Alvarez

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Croatia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Germany — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 3 Problem no.: 13

Juror: A ALLINSON Signature:

reject 4, 13 accept

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China (Liang Yan) — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach — BUT missed factors
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — ~~+1~~

- ☐ Clear and understandable
- ☑ Appropriate manner — LACKING in PHYSICS
- ☐ Overall impression — PRESENTATION NEEDED QUALITATIVE SELECTION OF PHYSICS

Reporter ±1 — 1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References (proper citations of ideas and input of others)
- ☐ Novelty of the report ✓ 7½/8
- ☐ Contribution to the discussion ✓

Final Grade: Reporter — 7

Opp.: Croatia (Damagoj) — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach } depth +
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression ✓

Opponent ±1 — 1 (very good role)

- ☐ Response to the reporter's solution ✓
- ☐ Shows the strong and weak points of the report ✓
- ☐ Finds shortcomings or errors in the report ✓
- ☐ Relevance of the questions ✓
- ☐ Contribution to the discussion ✓

Good Qs – brought out equat

Final Grade: Opponent — 8

Rev.: Germany — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — —

- ☐ Clear and understandable — Qs trying
- ☐ Appropriate manner — to create discussion
- ☐ Overall impression — [NOT APPROPRIATE]

Reviewer ±1 — -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent — Too aggressive NOT ✗ — Present our stuff

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 2 Problem no.: 10

Juror: Lobyshev Signature: Blake

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 — −1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: China — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Croatia — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 2 Problem no.: 10

Juror: Max Chalfin Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: China — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Croatia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: 6 Stage: 2 Problem no.: 10

Juror: Felicia Ullstad Signature: Felicia Ullstad

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 — −1

- [+] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: China — 5

Physics ±3 — +1,5

- [+] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [+] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +0,5

- [+] Response to the reporter's solution
- [✓] Shows the strong and weak points of the report
- [✓] Finds shortcomings or errors in the report
- [+] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Croatia — 5

Physics ±3 — +1,5

- [+] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +0,5

- [✓] Provides a thorough review of report and discussion
- [+] Expresses own opinion about topics presented or discussed
- [+] Relevance of questions to both the reporter and the opponent
- [−] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: 6 Stage: 2 Problem no.: 10

Juror: G.LASKHISHVILI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: GER — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: CH — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: CR — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 2

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 2 Problem no.: 10

Juror: Declan Alvaro Signature: DAlvaro

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: China — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Croatia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 2 Problem no.: 10

Juror: A ALLINSON Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Jonas — 5

Physics ±3 — $-\frac{1}{2}$

- ☐ Correct and relevant physics $-\frac{1}{2}$ YES BUT CAN'T EXPLAIN
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — $+\frac{1}{2}$

- ☐ Clear and understandable ✓
- ☐ Appropriate manner ✓
- ☐ Overall impression

P (mom)

Reporter ±1 — $+\frac{1}{2}$

- ☐ Quality of experimental technique(s) ✓ very good measurement technique +
- ☐ Structure
- ☐ Explanation of formulae and symbols +
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

But 3 points

NO Temp

NO Random walk MFP

Final Grade: Reporter — 6

Opp.: Lu — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach Mom mass
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — –

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report partly
- ☐ Finds shortcomings or errors in the report partly
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Iva — 5

Physics ±3 — 1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — $\frac{1}{2}$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion ✓
- ☐ Expresses own opinion about topics presented or discussed ✓
- ☐ Relevance of questions to both the reporter and the opponent ✓
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 1 Problem no.: 3

Juror: Lobyshev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **8**

Opp.: Germany — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **5**

Rev.: China — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **8**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 1 Problem no.: 3

Juror: Max Chalfin Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — +1

+ ☐ Correct and relevant physics
+ ☐ Scientific approach
~ ☐ Validity of conclusions
+ ☐ Accurate answers

Presentation ±1 — +1

☐ Clear and understandable
☐ Appropriate manner
☐ Overall impression

Reporter ±1 — 0

+ ☐ Quality of experimental technique(s)
+ ☐ Structure
+ ☐ Explanation of formulae and symbols
☐ Appropriate models, conformity of dimensions
+ ☐ Slides, on-site experiments, audio, video, as appropriate
+ ☐ References, proper citations of ideas and input of others
~ ☐ Novelty of the report
+ ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Germany — 5

Physics ±3 — 0

☐ Correct and relevant physics
☐ Scientific approach
☐ Validity of conclusions
☐ Accurate answers

Presentation ±1 — 0

☐ Clear and understandable
☐ Appropriate manner
☐ Overall impression

Opponent ±1 — +1

☐ Response to the reporter's solution
☐ Shows the strong and weak points of the report
☐ Finds shortcomings or errors in the report
☐ Relevance of the questions
☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: China — 5

Physics ±3 — +2

☐ Correct and relevant physics
☐ Scientific approach
☐ Validity of conclusions
☐ Accurate answers

Presentation ±1 — +1

☐ Clear and understandable
☐ Appropriate manner
☐ Overall impression

Reviewer ±1 — +1

☐ Provides a thorough review of report and discussion
☐ Expresses own opinion about topics presented or discussed
☐ Relevance of questions to both the reporter and the opponent
☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 1 Problem no.: 3

Juror: Felicia Ulltveit-Moe Signature: Felicia Ulltveit-Moe

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Germany — 5

Physics ±3 — +1,5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +0,5

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: China — 5

Physics ±3 — +2

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: _____ Problem no.: 3

Juror: G.LASKHISHVILI Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CR — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: GER — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: CH. — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 1 Problem no.: 3

Juror: Declan Alvaro Signature: Alvaro

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Germany — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: G Stage: 1 Problem no.: 3

Juror: A ALLINSON Signature: Alan Allinson

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Vasiliye Perovic, Georgia — 5

Physics ±3 — -½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions — why?
- ☐ Accurate answers

Presentation ±1 — +½

- ☐ Clear and understandable ✓
- ☐ Appropriate manner ✓
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s) ½
- ☐ Structure
- ☐ Explanation of formulae and symbols ✗ I?
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report ~ Nice prac
- ☐ Contribution to the discussion

observational Theory not predictive + not tested

Final Grade: Reporter — 5

Opp.: Felix Wechsler, Germany — 5

Physics ±3 — ½

- ☐ Correct and relevant physics ✓
- ☐ Scientific approach ✓
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable ✓
- ☐ Appropriate manner ✓
- ☐ Overall impression

Opponent ±1 — —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report ✓
- ☐ Finds shortcomings or errors in the report ✓
- ☐ Relevance of the questions ✓ (followed through then left)
- ☐ Contribution to the discussion

good Qs followed but only briefly. — poor summation see observe, pictures (no physics)

Final Grade: Opponent — 7

Rev.: Zhao Yi Xiu, China — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions — depth
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent ✓ excellent questions
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 4 Room: 6 Fight Assistants: .....

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Croatia	Germany	China	Germany	China	Croatia	China	Croatia	Germany			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Valentin Lobyshev	8	5	8	5	8	7	8	7	9			
Max Chalfin	7	6	9	6	8	7	7	7	4			
Felicia Ulletad	4	7	9	4	7	7	9	7	9			
George Ladislishvili	5	7	8	5	7	7	7	7	8			
Declan Alcaro	5	6	9	5	8	7	7	7	8			
Alan Allinson	5	7	8	6	7	7	7	8	6			
Acting Team Member	Vasilije Pavić	Felix Wechsler	Zhao Yifan	Jonas Landgraf	Lu Sicong	Ivo Dominović	Liang Yan	Domagoj Pluščec	Anne Hensel			
Rejected Problems				11			4					
Accepted Problem	3			10			13					

Signature Fight Assistant: Di Xia ..... Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 3 Problem no.: 7

Juror: Timoshchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 — -0,5

- [+] Correct and relevant physics
- [ ] Scientific approach
- [-] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [+] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — -0,5

- [-] Quality of experimental technique(s)
- [ ] Structure
- [-] Explanation of formulae and symbols
- [-] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Korea — 5

Physics ±3 — +1

- [+] Correct and relevant physics
- [+] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [+] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +1

- [+] Response to the reporter's solution
- [+] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [+] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Bulgaria — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

16 rejected, 4 rejected, 7 accepted

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 3 Problem no.: 7

Juror: L. Croxford Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 — 1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Korea — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Bulgaria — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 3 Problem no.: 7

Juror: S. Byland Signature: By S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 — −½

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −½

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Korea — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☒ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Bulgaria — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +½

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 3 Problem no.: ~~10~~ 7

Juror: A. NADOLNY Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3: −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1: −½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1: −½

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter: 3

Opp.: 5

Physics ±3:

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1:

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1:

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent: 6

Rev.: 5

Physics ±3:

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1:

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1:

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer: 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 3 Problem no.: 7

Juror: STANISLAV PALOŠ Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

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- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: GEORGIA — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression
- ☒ graphs, visibility of tables

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: KOREA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: BULGARIA — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression
- ☒ small font

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: 4 Stage: 3 Problem no.: 7

Juror: PUBSCH Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3

Opp.: _____ 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: _____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 2 Problem no.: 6

Juror: S. Byland Signature: By

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter ±1 — +½

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Georgia — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression too short

Opponent ±1 — −½

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Korea — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☒ Overall impression

Reviewer ±1 — +½

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 2 Problem no.: 6

Juror: I. Croxford Signature: IC

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Georgia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Korea — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 2 Problem no.: 6

Juror: Timoshchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — -0,2

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0,3

- [ ] Clear and understandable
- [ ] Appropriate manner
- [-] Overall impression

Reporter ±1 — -0,5

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [+] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Georgia — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [+] Response to the reporter's solution
- [+/-] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [+/-] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Korea — 5

Physics ±3 — +0,5

- [+] Correct and relevant physics
- [+] Scientific approach
- [+] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [+] Provides a thorough review of report and discussion
- [+] Expresses own opinion about topics presented or discussed
- [+] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 2 Problem no.: 6

Juror: A. NADOLINY Signature: Nadoly

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 8 Room: 4 Stage: 2 Problem no.: _____

Juror: PLESCH Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 Ø

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 Ø

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 Ø

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: _____ 5

Physics ±3 -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 Ø

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: _____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 Ø

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 Ø

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 2 Problem no.: 6

Juror: STANISLAV PANOŠ Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BULGARIA — 5

Physics ±3 — -1,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — + 0,5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

☒ graphs, photos, TIME?

Final Grade: Reporter — 4

Opp.: GEORGIA — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: KOREA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 1 Problem no.: 15

Juror: S. Byland Signature: By

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s) vibrata ?
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Bulgaria — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Georgia — 5

Physics ±3 — −½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 1 Problem no.: 15

Juror: Timoshchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — +0,5

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Bulgaria — 5

Physics ±3 — -0,5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — -0,5

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Georgia — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — -1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

No15 Oil Stars.

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 1 Problem no.: 15

Juror: T. Croxford Signature: TSC

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 +1/2

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1/2

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1/2

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Bulgaria — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **5**

Rev.: Georgia — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **5**

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 1 Problem no.: 15

Juror: A. NADOLNY Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 1 Problem no.: 15 (15)

Juror: A. NADOLNY Signature: _____

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 1 Problem no.: 95

Juror: RIESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: ____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: ____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: H Stage: 1 Problem no.: 15

Juror: STANISLAV PALOŠ Signature: Pan-Š

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: KOREA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reporter ±1 — +0,5

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: BULGARIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression
- ☒ SMALL FONT

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: GEORGIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reviewer ±1 — -0,5

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about 1 topics presented or discussed.
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 4 Room: H Fight Assistants: Song Jinghan

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	korea	Bulgaria	Georgia	Bulgaria	Georgia	korea	Georgia	korea	Bulgaria			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Samuel Byland	6	7	4	6	4	7	4	7	7			
Tim Croxford	7	5	5	6	5	7	6	8	8			
Igor Timoshchenko	6	4	4	4	5	7	4	8	7			
Andrzej Nadolny	8	7	8	6	5	7	3	6	6			
Martin Plesch	6	7	5	5	4	6	3	7	6			
Stanislav Panos	6	6	5	4	4	6	3	8	7			
Acting Team Member	Ahn CHONG EUNHYUN	Ivelin Racher	Giorgi Tsereteli	Ivan Tsonev	Giorgi Bakhtadze	Ahn Cheong Eung	Giorgi Bakhtadze	Hyan seok Cho	Nikolay Nikolov			
Rejected Problems						16. 4.						
Accepted Problem	15. Oil stars			6. Bubble crystal			7. Pot-in-pot refrigerator					

Signature Fight Assistant: Song Jinghan Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: 1 Problem no.: 4

Juror: KUNDRACIK Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AUSTRALIA — 5

Physics ±3 — −2

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: UKRANE — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: TAIWAN — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: 1 Problem no.: 4

Juror: M KUNESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable +0.5
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate +0.5
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report +0.5
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Taiwan — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 4 Room: 1 Stage: 1 Problem no.: 4

Juror: Qayke Signature: Qayke

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 — −1

- ☑ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☑ Appropriate manner
- ☒ Overall impression

Reporter ±1 — 0

- ☒ Quality of experimental technique(s) ✗
- ☒ Structure ✗
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Taiwan — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — 0

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer — 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): IV. Room: I Stage: 1 Problem no.: 4

Juror: DAGMAR PANOŠOVÁ Signature: Panošová

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Aw — 5

Physics ±3 -0,75

- [±] Correct and relevant physics
- [✓] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 -0,25

- [±] Clear and understandable
- [✓] Appropriate manner
- [ ] Overall impression

Reporter ±1 -0,5

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [✓] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [✓] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [✓] Contribution to the discussion

Final Grade: Reporter 4

Opp.: Ub — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [✓] Clear and understandable
- [✓] Appropriate manner
- [ ] Overall impression

Opponent ±1

- [ ] Response to the reporter's solution
- [✓] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [✓] Relevance of the questions
- [✓] Contribution to the discussion

Final Grade: Opponent 5

Rev.: Tw — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0,5

- [✓] Clear and understandable
- [✓] Appropriate manner
- [ ] Overall impression

Reviewer ±1 +0,5

- [✓] Provides a thorough review of report and discussion
- [✓] Expresses own opinion about topics presented or discussed
- [✓] Relevance of questions to both the reporter and the opponent
- [✓] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: 1 Problem no.: _____

Juror: M.H. Kwon Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Jesse — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: _____ — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: _____ — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: 1 Problem no.: 4.

Juror: Kerry Parker Signature:

A report should include:

-1

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner Very limited, did not isolate parametes or even vary collisions.

Novelty

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia Jesse Tong — 5

Physics ±3 — +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 3.

Opp.: Ukraine Kasobutsky Oleksii — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Taiwan — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: 2 Problem no.: 10

Juror: KVADRAEK Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UKRAINE — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: TAIWAN — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: AUSTRALIA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: 2 Problem no.: 10

Juror: M KUNESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s) −0.5
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Taiwan — 5

Physics ±3 +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Australia — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: 1 Stage: 2 Problem no.: 10

Juror: Dmytro Signature: Dmytro

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 — −1

- ☑ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☒ Quality of experimental technique(s)
- ☑ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Taiwan — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Australia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): IV. Room: I Stage: 2 Problem no.: 10

Juror: DAGMAR PANOŠOVÁ Signature: Panošová

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nb — 5

Physics ±3

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0,5

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☒ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Tw — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Aw — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: 2 Problem no.: ____

Juror: M. H. Kwon Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Taiwan — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Australia — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: 2 Problem no.: 10.

Juror: Kerry Parker Signature: Ken Lo

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 ~~-0.5~~

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Taiwan. Wei Tso Chen — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Australia. Jesse Tong — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 —

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: 3 Problem no.: 16

Juror: KUNDRATEK Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: TAIWAN — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0,5

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: AUSTRALIA — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +0,5

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: UKRAINE — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +0,5

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: 3 Problem no.: 16

Juror: M KUNESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Australia — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Ukraine — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: 1 Stage: 3 Problem no.: 16

Juror: Olyte Signature: Olyte

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Australia — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☑ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Ukraine — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☒ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): IV. Room: I Stage: 3 Problem no.: 16

Juror: DAGMAR PANOŠOVÁ Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Tw — 5

Physics ±3 — −1

- [−] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Reporter ±1 — +0,5

- [±] Quality of experimental technique(s)
- [+] Structure
- [+] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Au — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +1,5

- [ ] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Uk — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: 3 Problem no.: ____

Juror: M.H. Kwon Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 [ ]
- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [1]
- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 [ ]
- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter [6]

Opp.: Aust — 5

Physics ±3 [2]
- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [1]
- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 [ ]
- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent [8]

Rev.: Ukraine — 5

Physics ±3 [1]
- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 [ ]
- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 [1]
- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer [7]

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: 3 Problem no.: 16

Juror: K. Parker - Signature: Ken

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan. Ya-Chu Chan — 5

Physics ±3 +2.0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Australia. Swagean Somasundaram — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 —

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Ukraine. Mykyta Shchedrodosyn — 5

Physics ±3 +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 4 Room: 1 Fight Assistants: Ruizhi Zuo

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Australia	Ukraine	Taiwan	Ukraine	Taiwan	Australia	Taiwan	Australia	Ukraine			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Frantisek Kundracik	6	6	8	6	7	7	6	7	6			
Markus Kuresch	6	5	7	5	7	8	7	6	7			
Qing Ye	4	5	~~8~~ 7	4	7	6	7	6	6			
Dagmar Panosova	4	5	6	6	8	6	5	7	6			
Myeung Hol Kwon	4	5	6	6	7	7	6	8	7			
Kenny Parker	3	5	8	6	7	5	8	5	7			
Acting Team Member	Jesse Tang	Oleksii Kosobutskyi	Yun-Ju Wu	Borys Solovion	~~Yun-Ju Wu~~ Wei-Tao Chan	Jesse Tang	Ya-Chu Chan	Sivagowri Samasundaram	Mykyta Shchedrolosyev			
Rejected Problems	15						5					
Accepted Problem	4.			10			16.					

Signature Fight Assistant:..... Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 4 Room: J Stage: 3 Problem no.: 8

Juror: PHIL O'NEILL Signature: P O'Neill

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AUSTRIA — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: SLOVINIA — 5

Physics ±3 —

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — ½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — ½

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: SWITZERLAND — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — ½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — ½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: I Stage: _____ Problem no.: 8

Juror: Peimuraz Chicho Signature: P. Chicho

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AT — 5

Physics ±3 — +3

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1

- [x] Quality of experimental technique(s)
- [x] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 8

Opp.: SL — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: SE — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: J Stage: _____ Problem no.: _____

Juror: W. MEEVNANA Signature: WM.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Aft — 5

Physics ±3 -1.5

- ☐ Correct and relevant physics +0.5
- ☐ Scientific approach -2
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: SL — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: SE — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics +0.5
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers +0.5

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression +0.5

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 4 Room: J Stage: 3 Problem no.: 8

Juror: KUBINEC Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AUSTRIA — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: SLOVENIA — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: SWEDEN — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: 5 Stage: 3 Problem no.: 8

Juror: E. Casali Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Austria — 5

Physics ±3 — 1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Slovenia — 5

Physics ±3 — -1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -1/2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Sweden — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: 1 Stage: 3 Problem no.: 8

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Paul Worm, Austria — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 9

Opp.: Uroš Zavrtanik, Slovenia — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Jacob Helman, Sweden — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: J Stage: 2 Problem no.: 14

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Alexander Åkesson, Austria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Paul Warm, Sweden — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Slovenia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: J Stage: 2 Problem no.: 14

Juror: E. Casali Signature: Casali

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 — 1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Austria — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Slovenia — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: J Stage: 2 Problem no.: 14

Juror: KUBINEC Signature: Kubinec

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Rubber

Scoring Guidelines

Fight (Round no.): 4 Room: _____ Stage: _____ Problem no.: 14

Juror: M. Meevasana Signature: W.M.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SE — 5

Physics ±3 −

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 −0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: AT — 5

Physics ±3 −0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: SL — 5

Physics ±3 −0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 −0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Scoring Guidelines

Fight (Round no.): 4 Room: J Stage: _____ Problem no.: 14

Juror: Teimuraz Chubinidze Signature: T. Chubinidze.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SE — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: AT — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: SL — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: J Stage: 2 Problem no.: 14

Juror: PHIL O'NEILL Signature: POMeill

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SWEDEN — 5

Physics ±3 —

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — ½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — ½

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: AUSTRIA — 5

Physics ±3 —

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: SLOVINIA — 5

Physics ±3 —

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: J Stage: 1 Problem no.: 6

Juror: PHIL O'NEILL Signature: PhilO'Neill

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SLOVINIA — 5

Physics ±3 — -1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: SWEDEN — 5

Physics ±3 —

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — ½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — ½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: AUSTRIA — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — ½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — ½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: J Stage: _____ Problem no.: 6

Juror: Temuraz Chichua Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SL 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: SE 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: AT. 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

B.C.

Scoring Guidelines

Fight (Round no.): 4 Room: 5 Stage: _____ Problem no.: 6

Juror: W. Meevissen Signature: WM.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SL — 5

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: SE — 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: AT — 5

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 –

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Scoring Guidelines

Fight (Round no.): 4 Room: 7 Stage: 1 Problem no.: 6

Juror: KUBINEC Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SLOVENIA — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: SWEDEN — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: AUSTRIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: J Stage: 1 Problem no.: 6

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Uroš Zavrtanik, Slovenia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Sabrina Yue Wang, Sweden — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Vanessa Majnaric, Austria — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 4 Room: J Stage: 1 Problem no.: 6

Juror: E. Casali Signature: Casali

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Sweden — 5

Physics ±3 — 1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Austria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Round: 4 Room: J Fight Assistants: 杨鹏宇 Pengyu Yang

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	SL	SE	AT	SE	AT	SL	AT	SL	SE			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Philip O'Neill	4	6	7	6	7	7	8	6	7			
Teimuraz Chichua	4	5	6	6	6	6	8	5	6			
Worawat Meevasana	6	7	6	6	6	5	4	5	7			
Pavol Kubinec	4	6	6	6	6	5	7	4	6			
Eduardo Casalli	5	6	5	8	6	4	7	4	5			
Dmitrii Agarkov	5	7	6	6	7	5	9	5	5			
Acting Team Member	Uroš Zavrlanik	Solorina Yue Wang	Vanessa Majnaric	Alexander Åkesson	Paul Worm	Janež Turnšek	Paul Worm	UROŠ ZAVRTANK	Jakob Helman			
Rejected Problems	12			12								
Accepted Problem	6			14			8					

Signature Fight Assistant: 杨鹏宇 Pengyu Yang Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 1 Problem no.: 4

Juror: Thomas Lindner Signature: Thomas Lindner

A report should include:
• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:
• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:
• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 -0,5
- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1
- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0,5
- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: SVK — 5

Physics ±3 1,5
- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1
- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0,5
- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: SLO — 5

Physics ±3 0
- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1
- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -0,5
- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 1 Problem no.: 4

Juror: Felicia Ullstad Signature: Felicia Ullstad

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: United Kingdom — 5

Physics ±3 — +2

- [+] Correct and relevant physics
- [ ] Scientific approach
- [-] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0,5

- [-] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — +0,5

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [+] Slides, on-site experiments, audio, video, as appropriate
- [+] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Slovakia — 5

Physics ±3 — +2,5

- [+] Correct and relevant physics
- [ ] Scientific approach
- [+] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [+] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +1

- [+] Response to the reporter's solution
- [+] Shows the strong and weak points of the report
- [+] Finds shortcomings or errors in the report
- [+] Relevance of the questions
- [+] Contribution to the discussion

Final Grade: Opponent — 9

Rev.: Slovenia — 5

Physics ±3 — +1,5

- [+] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +0,5

- [-] Provides a thorough review of report and discussion
- [+] Expresses own opinion about topics presented or discussed
- [+] Relevance of questions to both the reporter and the opponent
- [+] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 4 Room: A Stage: 1 Problem no.: 4

Juror: A. NADOLNY Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 1 Problem no.: 4

Juror: S. Byland Signature: By

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +½

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Slovakia — 5

Physics ±3 — +½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Slovenia — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +½

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 1 Problem no.: 4

Juror: STANISLAV PANOŠ Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UK — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions NOT NEW CON.
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression
- ☒ TOO MANY TEXT ON SLIDE

Reporter ±1 — -0,5

- ? ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ? ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ? ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: SLOVAKIA — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: SLOVENIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 1 Problem no.: 4

Juror: Prapun Manyum Signature: P. Manyum

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: U.K. — 5

Physics ±3 —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Slovakia — 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Slovenia — 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 2 Problem no.: 8

Juror: Thomas Lindner Signature: Thomas Lindner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SVK — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: SLO — 5

Physics ±3 — 3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: AUS — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 2 Problem no.: 8

Juror: Felicia Ullstad Signature: Felicia Ullstad

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — +2

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — +1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — +1

- [x] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 9

Opp.: Slovenia — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Australia — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — -0,5

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 2 Problem no.: 8

Juror: A. NADOLNY Signature: Nadolny

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **8**

Opp.: _____ 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1/2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: _____ 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 —

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 2 Problem no.: 8

Juror: S Byland Signature: By (S)

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter ±1 — +½

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Slovenia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +½

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Australia — 5

Physics ±3 — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☒ Overall impression

time management

Reviewer ±1 — 0

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 2 Problem no.: 8

Juror: STANISLAV PAVOŠ Signature: Pavoš

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SLOVAKIA — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate, Fotos
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: SLOVENIA — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1,0

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: AUSTRALIA — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression
- ☒ SMALL FONT, TIME!

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 2 Problem no.: 8

Juror: Prapan Manyum Signature: P. Manyum

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovakia — 5

Physics ±3 — −

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Slovenia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Australia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 3 Problem no.: 13

Juror: Thomas Lindner Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SLO — 5

Physics ±3 — -1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4,3

Opp.: ~~SVK~~ AUS — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: UK — 5

Physics ±3 — ~~0~~ 1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 3 Problem no.: 13

Juror: Felicia Ullstad Signature: Felicia Ullstad

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — -1

- [-] Correct and relevant physics
- [-] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — -0,5

- [-] Clear and understandable
- [ ] Appropriate manner
- [-] Overall impression

Reporter ±1 — -0,5

- [+] Quality of experimental technique(s)
- [-] Structure
- [ ] Explanation of formulae and symbols
- [-] Appropriate models, conformity of dimensions
- [+] Slides, on-site experiments, audio, video, as appropriate
- [+] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Australia — 5

Physics ±3 — -1

- [+] Correct and relevant physics
- [ ] Scientific approach
- [-] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 0

- [+] Response to the reporter's solution
- [+] Shows the strong and weak points of the report
- [+] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [-] Contribution to the discussion

Final Grade: Opponent — 4

Rev.: United Kingdom — 5

Physics ±3 — +1

- [+] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [+] Provides a thorough review of report and discussion
- [+] Expresses own opinion about topics presented or discussed
- [+] Relevance of questions to both the reporter and the opponent
- [+] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 3 Problem no.: 13

Juror: A. NADOLNY Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter and opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 -1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 3 Problem no.: 13

Juror: S. Byland Signature: By (S)

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovania — 5

Physics ±3 — −2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — −½

- ☒ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Australia — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☒ Overall impression fine

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: UK — 5

Physics ±3 — +1½

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +½

- ☑ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 3 Problem no.: 13

Juror: STANISCAV PAVOŠ Signature: Pavoš

A report should include:
• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:
• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:
• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SLOVENIA — 5

Physics ±3 — +1
? ☐ Correct and relevant physics
☒ Scientific approach YES!
☒ Validity of conclusions
☐ Accurate answers

Presentation ±1 — +0,5
☒ Clear and understandable
☒ Appropriate manner
☐ Overall impression
☒ VIDEO PROBLEM

Reporter ±1 — +0,5
☐ Quality of experimental technique(s)
☐ Structure
☐ Explanation of formulae and symbols
☐ Appropriate models, conformity of dimensions
☒ Slides, on-site experiments, audio, video, as appropriate
☒ References, proper citations of ideas and input of others
☐ Novelty of the report
☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: AUSTRALIA — 5

Physics ±3 — 0
☐ Correct and relevant physics
☒ Scientific approach
☐ Validity of conclusions
☐ Accurate answers

Presentation ±1 — +0,5
☒ Clear and understandable
☒ Appropriate manner
☐ Overall impression

Opponent ±1 — +0,5
☐ Response to the reporter's solution
☒ Shows the strong and weak points of the report
☐ Finds shortcomings or errors in the report
☒ Relevance of the questions
☐ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: UK — 5

Physics ±3 — +0,5
☐ Correct and relevant physics
☐ Scientific approach
☐ Validity of conclusions
☐ Accurate answers

Presentation ±1 — 0
☒ Clear and understandable
☐ Appropriate manner
☐ Overall impression
☒ SMALL FONT

Reviewer ±1 — +0,5
☐ Provides a thorough review of report and discussion
☐ Expresses own opinion about topics presented or discussed
☒ Relevance of questions to both the reporter and the opponent
☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **6**

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 3 Problem no.: 13

Juror: Pegah Maryam Signature: P. Maryam

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Slovenia — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Australia — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: UK — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 4 Problem no.: 12

Juror: Thomas Lindner Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — /

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — /

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: UK — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Slovakia — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 4 Problem no.: 12

Juror: Felicia Ullstad Signature: Felicia Ullstad

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 — -2.5

- [-] Correct and relevant physics
- [ ] Scientific approach
- [-] Validity of conclusions
- [-] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — -0,5

- [-] Quality of experimental technique(s)
- [ ] Structure
- [-] Explanation of formulae and symbols
- [-] Appropriate models, conformity of dimensions
- [+] Slides, on-site experiments, audio, video, as appropriate
- [+] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 2

Opp.: United Kingdom — 5

Physics ±3 — +2

- [+] Correct and relevant physics
- [+] Scientific approach
- [+] Validity of conclusions
- [+] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +0,5

- [✓] Response to the reporter's solution
- [✓] Shows the strong and weak points of the report
- [✓] Finds shortcomings or errors in the report
- [+] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Slovakia — 5

Physics ±3 — +3

- [+] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [+] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [+] Provides a thorough review of report and discussion
- [+] Expresses own opinion about topics presented or discussed
- [+] Relevance of questions to both the reporter and the opponent
- [+] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 4 Problem no.: 12

Juror: A. NADOLNY Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +½

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: _____ 5

Physics ±3 +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: _____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 4 Problem no.: 12

Juror: S Byland Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 — −1½

- ☐ Correct and relevant physics (incomplete)
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — 0

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: UK — 5

Physics ±3 — +½

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☒ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Slovakia — 5

Physics ±3 — +1½

- ☒ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +½

- ☑ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 4 Problem no.: 12

Juror: STANISLAV PANOŠ Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AUSTRALIA — 5

Physics ±3 — −1

- [-] Correct and relevant physics
- [-] Scientific approach
- [-] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [+] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [+] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: UK — 5

Physics ±3 — +0,5

- [+] Correct and relevant physics
- [+] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [+] Clear and understandable
- [+] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +1

- [ ] Response to the reporter's solution
- [+] Shows the strong and weak points of the report
- [+] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: SLOVAKIA — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [+] Scientific approach
- [+] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [+] Clear and understandable
- [+] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [ ] Provides a thorough review of report and discussion
- [+] Expresses own opinion about topics presented or discussed
- [+] Relevance of questions to both the reporter and the opponent
- [+] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: A Stage: 4 Problem no.: 12

Juror: Praput Manyum Signature: P. Manyum

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: U.K. — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Slovakia — 5

Physics ±3 — -

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 5 Room: A Fight Assistants: Ziki Jia

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	United Kingdom	Slovakia	Slovenia	Slovakia	Slovenia	Australia	Slovenia	Australia	United Kingdom	Australia	United Kingdom	Slovakia
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Thomas Lindner	5	7	5	6	8	6	3	8	7	3	7	8
Felicia Ullstad	7	9	7	9	6	6	3	4	7	2	8	9
Andrzej Nadolny	7	8	6	8	7	7	4	5	7	5	7	8
~~Nadolny~~ Samul Byland	6	7	6	7	6	6	3	6	8	4	7	8
~~Samuel Byland~~ Stanislav Panos	4	8	5	8	7	6	7	6	6	4	7	8
Prapun Manyum	6	7	7	6	7	7	6	6	7	4	6	5
Acting Team Member	Ilya Lapan	Matej BADIN	UROŠ PREŠERN	Jakub Chudik	UROŠ ZAVRTAN IK	Sivagowri Somasun-daram	DARKO KOBLAR	Douglas COULTER	Dominic Dootsoy	CLAIRE ULRICH	LUCY THOMAS	Matej Badin
Rejected Problems												
Accepted Problem	4			8			13			12		

Signature Fight Assistant: Ziki Jia Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 1 Problem no.: 1

Juror: ChuanYong Li Signature: ChuanYong Li

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Croatia — 5

Physics ±3 +0.5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Bulgaria — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 1 Problem no.: 1

Juror: S MARTIN Signature: SCMartin

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions no I
- ☑ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — +½

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Croatia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +½

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Bulgaria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 1 Problem no.: 1

Juror: M KUNESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland — 5

Physics ±3 — +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach – need better comparison theory/exp.
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Croatia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Bulgaria — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0.5

- ☐ + Provides a thorough review of report and discussion
- ☐ ⊖ Expresses own opinion about topics presented or discussed
- ☐ + Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 1 Problem no.: 1

Juror: KUBINEC Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: POLAND — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: CROATIA — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: BULGARIA — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 1 Problem no.: _____

Juror: Dmitrii Agarkov Signature: _____

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Timothy Miara, Poland — 5

Physics ±3 — +3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 10

Opp.: Vasilije Perović, Croatia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Nikolay Nikolá, Bulgaria — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: _____ Problem no.: 1

Juror: W. Meevissen Signature: WM

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland Timothy — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 –

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Croatia Vasilije — 5

Physics ±3 +0.1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 –

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Bulgaria Nikolay — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5 +0.1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 2 Problem no.: 4

Juror: ChuanYong Li Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Bulgaria — 5

Physics ±3 — +0.5

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Poland — 5

Physics ±3 — +2

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 2 Problem no.: 4

Juror: S MARTIN Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: GO — 5

Physics ±3 +2

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 +½

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Bad. — 5

Physics ±3 +½

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +½

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression Very out of time.

Opponent ±1 −1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Pol — 5

Physics ±3 ½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 ½

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 2 Problem no.: 4

Juror: M KUNESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Bulgaria — 5

Physics ±3 +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Poland — 5

Physics ±3 +3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 10

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 2 Problem no.: 4

Juror: W. Meevissen Signature: WM

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Croatia — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — –

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Bulgaria — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — –

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression +0.5

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Poland — 5

Physics ±3 — +1

- ☐ Correct and relevant physics +1.0
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 2 Problem no.: 4

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Vasilie Perović, Croatia — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Ivan Tsonev, Bulgaria — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Radosł Waszkiewicz, Poland — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 2 Problem no.: 4

Juror: KUBINEC Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ~~BULGARIA~~ CROATIA — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: BULGARIA — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: POLAND — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 3 Problem no.: 10

Juror: Dmitrii Agarkov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ivelin Radkov, Bulgaria — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Radosł Waszkiewicz, Poland — 5

Physics ±3 — +3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 9

Rev.: Iva Dominović, Croatia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: _____ Problem no.: 10

Juror: W. Meevasana Signature: WM.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — –

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Poland — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Croatia — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — –

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 3 Problem no.: 10

Juror: KUBINEC Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BULGARIA — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: POLAND — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: CROATIA — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 3 Problem no.: 10

Juror: M KUNESCH Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Poland — 5

Physics ±3 — +3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Croatia — 5

Physics ±3 — +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 3 Problem no.: 10

Juror: S MARTIN Signature: SCMartin

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bul — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +½

- ☐ Quality of experimental technique(s) — not much effort.
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, ~~on-site experiments, audio~~, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Pol — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 +1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Gro — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: C Stage: 3 Problem no.: 10

Juror: ChuanYong Li Signature: ChuanYong Li

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Poland — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Croatia — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Round: ~~X~~ 5 Room: C Fight Assistants: Wang Jin

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Poland	Croatia	Bulgaria	Croatia	Bulgaria	Poland	Bulgaria	Poland	Croatia			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Chuan Yong Li	7	6	7	6	7	8	5	7	7			
Steve Martin	7	6	6	8	7	7	7	8	7			
Markus kunesch	8	6	5	6	6	10	5	7	7			
Pavol kubinec	8	7	7	5	5	7	5	7	8			
Worawat Meevasana	8	6	6	6	7	9	5	8	7			
Dmitrii Agarkov	10	5	7	6	7	8	4	9	6			
Acting Team Member	Tymoteuz Mrava	Vasilije Perovic	Nikolay Nikolov	Vasilije Perovic	Ivan Tsouev	Radost Waszkiewicz	Ivetin Rachev	Radost Waszkiewicz	Ivo Dominaine			
Rejected Problems												
Accepted Problem	1			4			10					

Signature Fight Assistant: Wang Jin. Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 4 Room: D Stage: 3 Problem no.: 16

Juror: Feng Song Signature: Feng

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 +0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: _____ 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.6

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.8

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: _____ 5

Physics ±3 +0.1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.8

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.7

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 3 Problem no.: 16

Juror: Sze Guan Kheng Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Czech Republic — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Thailand — 5

Physics ±3 — 0.25

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 3 Problem no.: 16

Juror: M.H. Kwon Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Czech — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Thailand — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 3 Problem no.: 16

Juror: Paskko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Reporter ±1 — -0,5

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Czech Rep — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Thailand — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 3 Problem no.: 16

Juror: E. Casali Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 — 3/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Czech Rep. — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1/2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Thailand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 3 Problem no.: 16

Juror: Ilya MARTCHENKO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Czech Rep. — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Thailand — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 2 Problem no.: 12

Juror: Olga MARTCHENKO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Germany — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Czech Rep. — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 2 Problem no.: 12

Juror: Feng Song Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: _____ 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 2 Problem no.: 12

Juror: Sze Guan Kheng Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Germany — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Czech Republic — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 2 Problem no.: 12

Juror: M.H. Kwon Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Germany — 5

Physics ±3 +2

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Czech — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −1

- ☐ Clear and understandable (hush)
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 2 Problem no.: 12

Juror: E. Casali Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Germany — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1/2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Czech Rep. — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 2 Problem no.: 12

Juror: Pasko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **5**

Opp.: Germany — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Czech Rep. — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **8**

Scoring Guidelines

Fight (Round no.): 1 Room: D Stage: 1 Problem no.: 1

Juror: Fang Song Signature: Fang Song

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 +0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: _____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: _____ 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 1 Problem no.: 1

Juror: Sze Guan Kheng Signature: SK

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Republic — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Thailand — 5

Physics ±3 — -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Germany — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 1 Problem no.: 1

Juror: M.H. Kwon Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Thailand — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Germany — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 1 Problem no.: 1

Juror: E. Caseli Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Republic — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Thailand — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Germany — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: D Stage: 1 Problem no.: 1

Juror: Pashko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Chech Rep — 5

Physics ±3 — +1,5

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Thailand — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Germany — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): ~~5~~ 5 Room: D Stage: 1 Problem no.: 1

Juror: Ilya MARTCHENKO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech Rep. — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Thailand — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: Germany — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 5 Room: D Fight Assistants: Zheng Yu

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Czech Republic	Thailand	Germany	Thailand	Germany	Czech Republic	Germany	Czech Republic	Thailand			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Ilya Martchenko	7	4	7	5	7	7	7	5	5			
Maksym Pashko	7	5	6	5	7	8	6	5	5			
Eduardo Casalli	7	6	6	5	7	6	8	7	5			
Myeung Hoi Kwon	7	6	7	7	8	6	7	7	6			
Guan Kheng Sze	6	4	7	7	7	6	6	7	6			
Feng Song	6	5	7	7	6	7	6	7	7			
Acting Team Member	Jan Mazač	Pawin Tachayan	Vincent Stimper	Taylor Yan	Felix Wechsler	Jan Mazač	Arne Hensel	Daniel Štěrba	Sorahon Chaichan			
Rejected Problems												
Accepted Problem	1. Invent yourself			12. Cold balloon			16. Magnetic brakes					

Signature Fight Assistant:..... Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 1 Problem no.: 12

Juror: Kim F Signature: [redacted]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: New Zealand — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0,5

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Macao — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Singapore — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 1 Problem no.: 12

Juror: Max Chalfin Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: New Zealand — 5

Physics ±3 — −1

- − ☐ Correct and relevant physics
- ~ ☐ Scientific approach
- − ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- + ☐ Quality of experimental technique(s)
- ☐ Structure
- ~ ☐ Explanation of formulae and symbols
- − ☐ Appropriate models, conformity of dimensions
- + ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- − ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Macao — 5

Physics ±3 — +1

- + ☐ Correct and relevant physics
- + ☐ Scientific approach
- + ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Singapore — 5

Physics ±3 — +2

- + ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 6 Stage: 1 Problem no.: 12

Juror: Qian Sun Signature: Qian Sun

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NZ — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Macao — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Singapore — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5. Room: E Stage: 1 Problem no.: 12

Juror: DAGMAR PANOŠOVÁ Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NZ — 5

Physics ±3

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0,5

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 +0,5

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter 6

Opp.: Ma — 5

Physics ±3

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 +0,5

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent 6

Rev.: Si — 5

Physics ±3 +2

- [ ] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +1

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reviewer ±1 +1

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 1 Problem no.: 12

Juror: T. Croxford Signature: TSC.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NZ — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Macao — 5

Physics ±3 — -1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Singapore — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 1 Problem no.: 12

Juror: [illegible] Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: ____ 5

Physics ±3 0.75

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0.25

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: ____ 5

Physics ±3 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 2 Problem no.: 11

Juror: Kim F Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 -2

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0,5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Singapore — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: New Zealand — 5

Physics ±3 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 2 Problem no.: 11

Juror: Max Chalfin Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Singapore — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: New Zealand — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 2 Problem no.: 11

Juror: Qian Su Signature: Qian Su

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Singapore — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: New Zeland — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 2 Problem no.: 11

Juror: DAGMAR PANOŠOVÁ Signature: Panošová

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ma — 5

Physics ±3 -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Ši — 5

Physics ±3 +2,1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 8

Rev.: NZ — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 2 Problem no.: 11

Juror: T. Croxford Signature: TC

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao — 5

Physics ±3 — -1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Singapore — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: NZ — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 2 Problem no.: 11

Juror: [illegible] Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 10 — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: 56 — 5

Physics ±3 — 1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: N2 — 5

Physics ±3 — 1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 3 Problem no.: 16

Juror: Kim F Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 +3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0,5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 9

Opp.: New Zealand — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Macao — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 3 Problem no.: 16

Juror: Max Chalfin Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- + ☐ Quality of experimental technique(s)
- ☐ Structure
- + ☐ Explanation of formulae and symbols
- ~ ☐ Appropriate models, conformity of dimensions
- ~ ☐ Slides, on-site experiments, audio, video, as appropriate
- ~ ☐ References, proper citations of ideas and input of others
- ~ ☐ Novelty of the report
- ~ ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: New Zealand — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Macao — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- + ☐ Provides a thorough review of report and discussion
- ~ ☐ Expresses own opinion about topics presented or discussed
- + ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 3 Problem no.: 16

Juror: Qian Sun Signature: Qian Sun

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5. Room: E Stage: 3 Problem no.: 16

Juror: DAGMAR PANOŠOVÁ Signature: Panošová

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: G

5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter 8

Opp.: NZ

5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Ha

5

Physics ±3 +0,75

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −0,5

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 3 Problem no.: 16

Juror: T. Croxford Signature: TSC

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: N 2 — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Macao — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 5 Room: E Stage: 3 Problem no.: 16

Juror: [illegible] Signature: [illegible]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
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- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: [illegible] — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: N2 — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: M2 — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 5 Room: E Fight Assistants: Fanglin Liu

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	New Zealand	Macao	Singapore	Macao	Singapore	New Zealand	Singapore	New Zealand ~~Macao~~	Macao			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Kim Freimann	5	6	8	4	8	5	9	8	7			
Max Chalfin	5	6	9	3	7	8	7	8	6			
Qian Sun	6	7	9	3	7	8	7	7	7			
Dagmar Panosova	6	6	9	4	8	8	8	8	6			
Tim Croxford	6	5	7	4	8	8	8	8	7			
Kveso Zadro	5	6	8	5	7	7	8	8	8			
Acting Team Member	Stanley Sorkies	Xie Jingyi	Joel Tan	Herman dai	Li Bingjian	Ivan Jin	Phyllis Poh	Fran Templey	Herman Lai			
Rejected Problems												
Accepted Problem	12			11			16					

Signature Fight Assistant: Fanglin Liu Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 1 Problem no.: 3

Juror: Assen Kyuldjiev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.9

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: China — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Brazil — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.8

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.4

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: Problem no.: 3

Juror: LARS GISLÉN Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CH — 5

Physics ±3 — 0.5

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0.4

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — 0.5

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 6

Opp.: CN — 5

Physics ±3 — 1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — 1

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 8

Rev.: BR — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — 1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 1 Problem no.: 3

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 +1 → −1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 0.5 → 0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 0 → 0

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [x] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter 5

Opp.: Cuba — 5

Physics ±3 2 → 2

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions own research
- [ ] Accurate answers

Presentation ±1 0.5 → 0.5

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Opponent ±1 0.5 → 0.5

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

no expt

Final Grade: Opponent 8

Rev.: Brazil — 5

Physics ±3 1 → 0.5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 1 → 1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 1 → 1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 1 Problem no.: 3

Juror: Shchetnikov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — 5

Physics ±3 −0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: China — 5

Physics ±3 +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Brasil — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 1 Problem no.: 3

Juror: Timoshchenko Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland **5**

Physics ±3 -0,5

- [+] Correct and relevant physics
- [ ] Scientific approach
- [-] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 +1

- [+] Quality of experimental technique(s)
- [+] Structure
- [+] Explanation of formulae and symbols
- [-] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [+] References, proper citations of ideas and input of others
- [+] Novelty of the report
- [+] Contribution to the discussion

Final Grade: Reporter 6

Opp.: China **5**

Physics ±3 +1,5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 +1

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent 8

Rev.: Brazil **5**

Physics ±3 +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 +0,5

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 1 Problem no.: 3

Juror: Yung-Yuan Hsu Signature: Yung-Yuan Hsu

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland — Tim Hogan — 5

Physics ±3 +0 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8.

Opp.: China — Zhao Yi Xu — 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6.

Rev.: Brazil — Giovani Ceotto — 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 2 Problem no.: 2

Juror: Asen Kyuldjiev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ____ 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.3

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0.3

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: ____ 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: ____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 2 Problem no.: 2

Juror: LARS GISLÉN Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 2 Problem no.: 2

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 1 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1 — 1

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Brazil — 5

Physics ±3 0.5 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −0.5 — −0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Switzerland — 5

Physics ±3 1 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0.5 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0.5 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 2 Problem no.: 2

Juror: Shchetnikov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 1,5 — 1,5

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

Presentation ±1 0,5 — 0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 1 — 1

- [x] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Brazil — 5

Physics ±3 −0,5 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

Presentation ±1 +0,5 — +0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [x] Overall impression

Opponent ±1 +0,5 — +0,5

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Switzerl. — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +0,5 — +0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 +0,5 — +0,5

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 2 Problem no.: 2

Juror: Timoshchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — 5

Physics ±3 — +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0,6

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Brazil — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Switzerland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5. Room: F Stage: 2. Problem no.: 2

Juror: Yung-Yuan Hsu Signature: Yung-Yuan Hsu

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China — Yixin Zhao — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☒ Clear and understandable
- ☐ Appropriate manner No -
- ☐ Overall impression

Reporter ±1 +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Brazil — Giovani Ceotto — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Switzerland — Lisba Heimbach — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 3 Problem no.: 10

Juror: Asen Kepuldjiev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BR — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: CH — 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: China — 5

Physics ±3 +0.7

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.7

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.6

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 3 Problem no.: _____

Juror: LARS GISLÉN Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: _____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: _____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 3 Problem no.: 10

Juror: David Kell Signature: David Kell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — 5

Physics ±3 -0.5 → -0.5

- [1] Correct and relevant physics
- [✓] Scientific approach
- [✓] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 -0.5 → -0.5

- [ ] Clear and understandable
- [X] Appropriate manner
- [ ] Overall impression

Reporter ±1 0 → 0

- [✓] Quality of experimental technique(s)
- [✓] Structure
- [ ] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter 4

Opp.: Switzerland — 5

Physics ±3 0 → 0 ~~0.5~~

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [✓] Accurate answers

Presentation ±1 0.5 → 0.5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 0.5 → 0.5

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent 6

Rev.: China — 5

Physics ±3 0 → ~~0~~ 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 → 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 -0.5 → -0.5

- [X] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer ~~4~~ 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 3 Problem no.: 10

Juror: Shchetnikov Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Switzerland — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: China — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: F Stage: 3 Problem no.: 10

Juror: Timoshchenko Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reporter ±1 — +0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Switzerland — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: China — 5

Physics ±3 — +0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 7 Stage: 3. Problem no.: 10

Juror: Yung-Yuan Hsu Signature: Yung-Yuan Hsu.

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil — Beatriz Amuda — 5

Physics ±3 -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -0,5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Switzerland — Svenja Ruth — 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7.

Rev.: China — Sicong Liu — 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 ~~-0,5~~ 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7.

Round: 5 Room: F Fight Assistants: Yang Aii

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Switzerland	China	Brazil	China	Brazil	Switzerland	Brazil	Switzerland	China			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Assen Kyuldjiev	6	8	6	7	6	7	4	7	7			
Lars Carlen	6	8	7	8	7	5	5	8	8			
David Kerr	5	8	8	8	6	7	4	6	5			
Andrey Shchetnikov	5	7	7	8	6	6	4	5	5			
Igor Timoshchenko	6	8	7	~~8~~	7	7	5	7	7			
Yung-Yuan Hsu	8	6	6	6	6	7	4	7	7			
Acting Team Member	Timothy Hogan	Yixiu Zhao	Giovani Cerutto	~~Yixiu~~ Yixiu Zhao	Giovani Cerutto	Lora Heimbach	Beatriz Silveira de Amaral	Svenja Ruth	Seong Lee			
Rejected Problems												
Accepted Problem	3			2			10					

Signature Fight Assistant: Yang Lii Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 5 Room: a Stage: 3 Problem no.: 7

Juror: REAVER Signature: Reaver

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE
Lloyd Adams — 5

Physics ±3 +1,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 2

Opp.: Georgia
Giorgi Sokhadze — 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 3

Rev.: Belarus
David Mnatsa — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: G Stage: 3 Problem no.: 7

Juror: R M TOCKNELL Signature: R M Tocknell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — −1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — −1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Georgia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Belarus — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 3 Problem no.: 7

Juror: SUE NAPIER Signature: SNapier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions -0.5
- ☐ Accurate answers -1

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression -0.5

Reporter ±1 — 0.5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Georgia — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Belarus — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: G Stage: 3 Problem no.: _____

Juror: TATYANA Signature: Tatyana G.S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -2,0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers (A FEW)

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s) → 2 experiments, no photos, details
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: GEORGIA — 5

Physics ±3 — +0,8

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0,2

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

VERY HARD TO OPPOSE

Final Grade: Opponent — 6

Rev.: BELAROS — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: G Stage: 3 Problem no.: 7

Juror: FRANCIS EKWENTO Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 -3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 6

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 02

Opp.: 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 3 Problem no.: 7

Juror: Dmytro Signature: Dmytro

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UAE — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☒ Overall impression

Reporter ±1 — -1

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 2

Opp.: Georgia — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☒ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☒ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Belarus — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: G Stage: 2 Problem no.: 2

Juror: REGNER Signature: Regner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus ~~[illegible]~~ Mihita Ahulich — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: UAE Nikil Sonimanan — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Georgia Luka Malashkia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: G Stage: 2 Problem no.: 2

Juror: R MTOCKNELL Signature: R Mockell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: UAE — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 — −1

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Georgia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 2 Problem no.: 2

Juror: SUE NAPIER Signature: SNapier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus (Belarus Mikita) — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Report of the Just.

Reporter ±1 — +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: UAE (Nikhil) — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Georgia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 6 Stage: 2 Problem no.: 2

Juror: TATYANA Signature: Tatyana g 5

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 /EQUATION FRESNELL COEFICIENTS — +2

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

→ DO NOT CONCLUDED IN TIME

Presentation ±1 — +0,5

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reporter ±1 — +0,5

- [x] Quality of experimental technique(s)
- [x] Structure
- [x] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 8

Opp.: UEA — 5

Physics ±3 — +0,5

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +0,5

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Georgia — 5

Physics ±3 — +0,5

- [ ] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +0,5

- [x] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 2 Problem no.: 2

Juror: FRANCIS EKWUEME Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: UAE — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Georgia — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 2 Problem no.: 2

Juror: Qing Ye Signature: Qing Ye

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☒ Overall impression

Reporter ±1 — 0

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: UAE — 5

Physics ±3 — 0

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☑ Appropriate manner
- ☒ Overall impression

Opponent ±1 — −1

- ☑ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Georgia — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☒ Overall impression

Reviewer ±1 — 0

- ☑ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: G Stage: 1 Problem no.: 5

Juror: REGNER Signature: Regner

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — Giorgi Tsereteli — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Belarus — Daniil Rumb — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: U. Arad Emirate — Nikhil Srinivasan — 5

Physics ±3 — −0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — −1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — −0,5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: G Stage: 1 Problem no.: 5

Juror: R M TOCKWELL Signature: R M Tockwell

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 — 0

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Belarus — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☑ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: UAE — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 1 Problem no.: 5

Juror: SUE NAPIER Signature: SANapier

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia Giorgi Tseretel. 5

Physics ±3 +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Belous Daniil Mnevets 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: UAE Nikhil. 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Cannot need it to small

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: G Stage: 1 Problem no.: 5

Juror: TATYANA Signature: Tatyana G. S

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Giorgi Tsuretili

Physics ±3 — -1

NO REFERENCES

- [ ] Correct and relevant physics
- [ ] Scientific approach ACCURACY
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0

- [ ] Quality of experimental technique(s) ERRORS?
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Belarus — 5

Daniil

Physics ±3 — +0,5

- [ ] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +0,5

- [ ] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

FOCUS ON 3D MODEL

Final Grade: Opponent — 6

Rev.: UAE — 5

Nikhil

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

CAN'T SEE (TOO SMALL)

Presentation ±1 — -0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — -0,5

- [x] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 1 Problem no.: 5

Juror: FRANCE [illegible] Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — [ ]

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Belarus — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: UAE — 5

Physics ±3 — [ ]

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — [ ]

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reviewer ±1 — [ ]

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: G Stage: 1 Problem no.: 5

Juror: Dmytro Signature: Dmytro

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Georgia — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Belarus — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — 0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: UAE — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reviewer ±1 — +1

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 5 Room: G Fight Assistants:

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Georgia	Belarus	UAE	Belarus	UAE	Georgia	UAE	Georgia	Belarus			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Ulrike Regner	5	7	3	5	4	4	2	3	8			
Mark Tockrell	6	5	3	6	4	4	3	6	7			
Susan Napier	6	5	4	6	5	5	3	6	6			
Tatyana Gonsalves Sam	4	6	4	8	5	5	2	6	7			
Iad Neng Chan	5	6	5	6	5	5	2	5	7			
Qing Ye	7	7	6	6	4	6	2	5	7			
Acting Team Member	Giorgi Tsereteli	~~Belarus~~ Daniil Mnevets	Nikhil Srumivasin	Mikita Akulich	Nikhil Srinivasan	Luka Mlashkhia	Vishal Zogbert	Giorgi Bakhtadze	Daniil Mnevets			
Rejected Problems												
Accepted Problem	5			2			7					

Signature Fight Assistant: Di Xin Double-checked with Scoring Guidelines by second Fight Assistant (signature):

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 3 Problem no.: 13

Juror: Reichle Signature: Reichle

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Austria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Nigeria — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0,5

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Korea — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☒ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 3 Problem no.: 13

Juror: MIHÁLY HÁMOSTREI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Anna — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Virginia — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: Kovács — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 3 Problem no.: 13

Juror: A ALLINSON Signature: A Allin

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Austria — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Nigeria — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — (OK)

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 3

Rev.: Korea — 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach — Good Qs
- ☐ Validity of conclusions — but not focus on physics
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 ½

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

7½ | 8

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 3 Problem no.: 13

Juror: H. C. KAO Signature: Hsien-chung Kao

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Austria — 5

Physics ±3 +1,2

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 +0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reporter ±1 +0,5

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Nigeria — 5

Physics ±3 +1,5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −0,3

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent **3**

Rev.: Korea — 5

Physics ±3 +1,5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reviewer ±1 +1

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **8**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 3 Problem no.: 13

Juror: Leszek Głodowski Signature: L. Głodowski

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Austria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Nigeria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: Korea — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 3 Problem no.: 13

Juror: Jakob Lavrød Signature: Jakob Lavrød

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: 5

Physics ±3 −1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 −0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 −1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 2

Rev.: 5

Physics ±3 +3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 2 Problem no.: 16

Juror: Jakob Lavrød Signature: Jakob Lavrød

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 -0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 -0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 3

Rev.: 5

Physics ±3 -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 -1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 2

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 2 Problem no.: 16

Juror: Peichl Signature: Peichl

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 — ~~0~~ 1,5

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0,5

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0,5

- [x] Quality of experimental technique(s)
- [x] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter — 8

Opp.: Austria — 5

Physics ±3 — 1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0,5

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — −0,5

- [x] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [x] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Nigeria — 5

Physics ±3 — ~~0~~ −0,5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0,5

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — −1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 2 Problem no.: 16

Juror: Leszek Gladecki Signature: L Gladecki

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.25

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0.60

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Austria — 5

Physics ±3 — 0.2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Nigeria — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 2 Problem no.: 16

Juror: H. C. Kao Signature: Hsien-chung Kao

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 +0.6

- − ☐ Correct and relevant physics
- + ☐ Scientific approach
- ☐ Validity of conclusions
- − ☐ Accurate answers

Presentation ±1 +0,5

- + ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Reporter ±1 +0,2

- − ☐ Quality of experimental technique(s)
- + ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- + ☐ Contribution to the discussion

Final Grade: Reporter **6**

Opp.: Austria — 5

Physics ±3 +0.6

- + ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,5

- + ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Opponent ±1 +0,2

- + ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- + ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **6**

Rev.: Nigeria — 5

Physics ±3 −1

- − ☐ Correct and relevant physics
- ☐ Scientific approach
- + ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0,2

- ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Reviewer ±1 +0,2

- + ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- + ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **4**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 2 Problem no.: 16

Juror: MIHÁLY HÖMÖSTRÉI Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics, presentation*** and for their ***specific role***.
- The ***reporter, opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 — 0

- [−] Correct and relevant physics
- [−] Scientific approach
- [−] Validity of conclusions
- [+] Accurate answers

Presentation ±1 — −0,5

- ~ [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — −0,5

- [+] Quality of experimental technique(s)
- ~ [ ] Structure
- [−] Explanation of formulae and symbols
- ~ [ ] Appropriate models, conformity of dimensions
- [+] Slides, on-site experiments, audio, video, as appropriate
- [−] References, proper citations of ideas and input of others
- [−] Novelty of the report
- [−] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Austria — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1 ~~+0,5~~

- [+] Clear and understandable
- [ ] ~ Appropriate manner
- [+] Overall impression

Opponent ±1 — +1 ~~+0,5~~

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Nigeria — 5

Physics ±3 — 0

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — −1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — −1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 3

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 2 Problem no.: 16

Juror: A ALLINSON Signature: Alan Allinson

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Korea — 5

Physics ±3 — PARK — +½

- ☐ Correct and relevant physics
- ☐ Scientific approach — NOT CONVINCED
- ☐ Validity of conclusions — CAN NEGLECT
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +½

- ☐ Quality of experimental technique(s) ✓
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions ?
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

-½/8

Final Grade: Reporter — 8

Opp.: Austria — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach — good + points not really developed
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — ½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — ½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Nigeria — 5

Physics ±3 — -½

- ☐ Correct and relevant physics
- ☐ Scientific approach — not really showing.
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — —

- ☐ Clear and understandable — OK
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — -½

- ☐ Provides a thorough review of report and discussion — depth — restating rather than describing/explaining
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 1 Problem no.: 7

Juror: Jakob Lavröd Signature: Jakob Lavröd

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 1 Problem no.: 7

Juror: Leszek Gladon Signature: L. Gladon

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Korea — 5

Physics ±3 — -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Austria — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reviewer ±1 — 0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 1 Problem no.: ~~M~~ 7

Juror: Reichle Signature: Reichle

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Korea — 5

Physics ±3 — 1,5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0,5

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Austria — 5

Physics ±3 — 0,5

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 1 Problem no.: 7

Juror: A ALLINSON Signature: Alan Allinson

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Zainab Rabu (Nigeria) — 5

Physics ±3 — −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Accuracy? low level NOT incorporating sign of process (DRAW)

Presentation ±1 — —

- ☐ Clear and understandable
- ☐ Appropriate manner OK
- ☐ Overall impression

Reporter ±1 — —

- ☐ Quality of experimental technique(s) −½ CONTROL
- ☐ Structure
- ☐ Explanation of formulae and symbols ✓
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Anthony Cho (Korea) — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — —

- ☐ Clear and understandable
- ☐ Appropriate manner OK
- ☐ Overall impression

Opponent ±1 — ~

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report some.
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Vanessa Majnaric (Austria) — 5

Physics ±3 — —

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Didn't focus on physics

Presentation ±1 — +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — ½

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 0

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 11 Stage: 1 Problem no.: 7

Juror: MIHÁLY HÖMÖSTEGI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — -0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Korea — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 5

Rev.: Austria — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: H Stage: 1 Problem no.: 7

Juror: H. C. KAO Signature: Hsien-chung Kao

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria — 5

Physics ±3 — 0

- + ☐ Correct and relevant physics
- + ☐ Scientific approach
- − ☐ Validity of conclusions
- − ☐ Accurate answers

Presentation ±1 — −0.5

- − ☐ Clear and understandable
- ☐ Appropriate manner
- − ☐ Overall impression

Reporter ±1 — +0.4

- + ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- + ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Korea — 5

Physics ±3 — +0.8

- + ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- − ☐ Accurate answers

Presentation ±1 — +0.4

- + ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Opponent ±1 — +0.6

- + ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- + ☐ Relevance of the questions
- + ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Austria — 5

Physics ±3 — +1

- + ☐ Correct and relevant physics
- + ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.4

- + ☐ Clear and understandable
- ☐ Appropriate manner
- + ☐ Overall impression

Reviewer ±1 — +0.6

- + ☐ Provides a thorough review of report and discussion
- + ☐ Expresses own opinion about topics presented or discussed
- + ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

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Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 5 Room: H Fight Assistants: Song Jinghan

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Nigeria	Korea	Austria	Korea	Austria	Nigeria	Austria	Nigeria	Korea			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Alan Alinson	4	6	6	8	7	4	8	3	8			
Mihály Hömöstrei	4	5	6	4	8	3	8	4	8			
Hsien-Chung Kao ~~Rainer Reichle~~	5	7	7	6	6	4	7	3	8			
Rainer Reichle ~~Leszek Gladczuk~~	5	8	8	8	6	4	6	4	6			
Leszek Gladczuk	4	7	7	7	6	4	6	4	6			
Jakob Lauvad	4	6	7	6	3	2	8	2	9			
Acting Team Member	Zainado Ralow	Anthony Cho Hyun	Vanessa Majnaric	Woon Yeol kim	Paul Worm	Ibialim kabir	Paul Worm	Mustapha AJukun	Joon Hyun Ko			
Rejected Problems												
Accepted Problem	7.			16.			13.					

Signature Fight Assistant: Song Jinghan. Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 1 Problem no.: 9

Juror: YF YLO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Russia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Ukraine — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 1 Problem no.: 9

Juror: Dana Mansardi Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 5 Room: I Stage: 1 Problem no.: 9

Juror: Craig McDonagh Signature: C. McD

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 5

Opp.: Russia — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Ukraine — 5

Physics ±3 — +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 1 Problem no.: 9

Juror: G.LASKHISHVILI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

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• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

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- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hung.

5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: RUS

5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: UKR.

5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: I Stage: 1 Problem no.: ____

Juror: G. Jennings Signature: G. Jennings

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

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- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary — Abel Beregi — 5

Physics ±3 +0.5

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +0.25

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 +0.25

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter 6.

Opp.: Russia — Vitalii Matiunin — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Ukraine — Pavlo Palnichak — 5

Physics ±3 0.5

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 +0.25

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 +0.25

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): K Room: I Stage: 2 Problem no.: 9

Juror: IVANTSIPAU Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: HU — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner too fast
- ☒ Overall impression

Reporter ±1 — +1

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: KU — 5

Physics ±3 — +1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — +0.5

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: UA — 5

Physics ±3 — 0

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): IV Room: I Stage: 2 Problem no.: 6

Juror: IVAN ANTSIFAU Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: RU — 5

Physics ±3 — +2

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — +1

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reporter ±1 — +0,5

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☑ Contribution to the discussion

Final Grade: Reporter — 9

Opp.: UA — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 — +0,5

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☑ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent — 4

Rev.: HU — 5

Physics ±3 — +1

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☑ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression

Reviewer ±1 — 0

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer — 6

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Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 2 Problem no.: 6

Juror: YE YEO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 +½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +½

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Ukraine — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Hungary — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +½

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 2 Problem no.: 6

Juror: Ilona Remark Signature: Ilona

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s) +-
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 ½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: I Stage: 2 Problem no.: 6

Juror: Craig McDonagh Signature: C. McD

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +0.5

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reporter ±1 — + 0.5

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: Ukraine — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — + 1

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: Hungary — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0.5

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 6

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: I Stage: 2 Problem no.: 6

Juror: G.LASKHISHVILI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: RUS — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: UKR — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: HUN — 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Scoring Guidelines

Fight (Round no.): 5 Room: I Stage: 2 Problem no.: 6

Juror: G. Jennings Signature: G. Jennings

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia — Yanko Pavel — 5

Physics ±3 +1.25

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +0.25

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☑ Explanation of formulae and symbols
- ☑ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☑ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Ukraine — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.25

- ☒ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Opponent ±1 +0.75

- ☒ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Hungary, Armin Beda — 5

Physics ±3 +1.0

- ☑ Correct and relevant physics
- ☑ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 +0.75

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☑ Overall impression

Reviewer ±1 +0.25

- ☑ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☑ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): V Room: I Stage: S/1 Problem no.: 10

Juror: IVAN ANTIPAL Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: dA — 5

Physics ±3 — +2

- [x] Correct and relevant physics
- [ ] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — ±0

- [x] Clear and understandable
- [x] Appropriate manner
- [ ] Overall impression

Reporter ±1 — -0,4

- [x] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [x] Slides, on-site experiments, audio, video, as appropriate
- [x] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [x] Contribution to the discussion

Final Grade: Reporter — 4

Opp.: HU — 5

Physics ±3 — +1

- [x] Correct and relevant physics
- [ ] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +0,5

- [x] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [x] Finds shortcomings or errors in the report
- [x] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 4

Rev.: RU — 5

Physics ±3 — +2

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — ±0

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: I Stage: 3 Problem no.: 16

Juror: YL YLO Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Hungary — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +½

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Russia — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: I Stage: S Problem no.: 16

Juror: Dana Bernardi Signature: Dana

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: _____ 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: I Stage: 3 Problem no.: 16

Juror: Craig McDougall Signature: C. McD

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine — 5

Physics ±3 — 0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion ✓

Final Grade: Reporter — 6

Opp.: Hungary — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0.5

- ☑ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Russia — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: I Stage: 3 Problem no.: 16

Juror: GLASKHISHVILI Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UKR — 5

Physics ±3 — 0,5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☑ Validity of conclusions
- ☑ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0,5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☑ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 6

Opp.: HUN — 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: RUS — 5

Physics ±3 — 1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: I Stage: 3 Problem no.: 16

Juror: G Jennings Signature: G Jennings

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine

Shchedrolosevmykyta. — 5

Physics ±3 — +0.5

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +0.25

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0

- [ ] Quality of experimental technique(s)
- [ ] Structure
- [x] Explanation of formulae and symbols
- [ ] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 6

Opp.: Hungary

Linh Pham Th — 5

Physics ±3 — +0.5

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — +0.25

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 — +0.25

- [ ] Response to the reporter's solution
- [x] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 6

Rev.: Russia

Matunin ?! — 5

Physics ±3 — +1.5

- [x] Correct and relevant physics
- [x] Scientific approach
- [x] Validity of conclusions
- [x] Accurate answers

Presentation ±1 — +0.5

- [x] Clear and understandable
- [x] Appropriate manner
- [x] Overall impression

Reviewer ±1 — +1

- [x] Provides a thorough review of report and discussion
- [x] Expresses own opinion about topics presented or discussed
- [x] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Round: 5 Room: 1 Fight Assistants: Ruizhi Zuo

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Hungary	Russia	Ukraine	Russia	Ukraine	Hungary	Ukraine	Hungary	Russia			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Ivan Antsipau	6	7	5	9	7	6	7	7	7			
Ye Yao Yeo	6	8	6	7	5	6	6	6	8			
Iluna Massarek	6	8	7	7	6	6	6	6	7			
Craig McDonagh	5	7	6	7	8	6	6	7	8			
George Laskhishvili	6	7	6	7	7	7	6	7	8			
Gavin Jennings	6	7	6	7	7	7	6	6	7			
Acting Team Member	Abel Beregi	Vitalii Matiunin	Pavlo Palinichak	Pavel Ianko	Oleksii Kosobutskyi	Armin Bédo	Mykyta Shchedrolosyev	Linh Pham Thi	Vitalii Matiunin			
Rejected Problems												
Accepted Problem	9			6			16					

Signature Fight Assistant:..... Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....

Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 1 Problem no.: 13

Juror: Lobyshev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +2

- ☑ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☑ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 9

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: J Stage: 1 Problem no.: 13

Juror: Maslechko a. Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Chung-Chun Hsieh (Taiwan) — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☑ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☑ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: (Romania) — 5

Physics ±3 +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 0

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: (Sweden) — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 1 Problem no.: 13

Juror: X. Vaterlaus Signature: X. Vaterlaus

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** *and* ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: TW — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1/2

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 7

Opp.: RO — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1/2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: SE — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: J Stage: 1 Problem no.: 13

Juror: Declan Alvaro Signature: Alvaro

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** **and** ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 9

Opp.: Romania — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Sweden — 5

Physics ±3 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: J Stage: 1 Problem no.: 13

Juror: ChanOung Park Signature: ChanOung Park

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative, non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan — 5

Physics ±3 +1.0

- ☐ Correct and relevant physics
- ☐ Scientific approach +1.0
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☑ Appropriate manner +0.5
- ☐ Overall impression

Reporter ±1 +0.5

- ☑ Quality of experimental technique(s) +0.5
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **7**

Opp.: Romania — 5

Physics ±3 +1.0

- ☐ Correct and relevant physics
- ☐ Scientific approach +1.0
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1.0

- ☑ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Sweden — 5

Physics ±3 +1.0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable +0.5
- ☐ Appropriate manner
- ☐ Overall impression round up

Reviewer ±1 +1.0

- ☑ Provides a thorough review of report and discussion +0.5
- ☑ Expresses own opinion about topics presented or discussed +0.5
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **8**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: 7 Stage: 2 Problem no.: 3

Juror: Lobyntsev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: _____ 5

Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: _____ 5

Physics ±3 +1

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: J Stage: 2 Problem no.: 3

Juror: Maslechko a. Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Horia Mărgineanu (Romania) — 5

Physics ±3 — −2

- [x] Correct and relevant physics
- [x] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — 0

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 — 0

- [x] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter — 3

Opp.: Alexander Adăscăliței (SE) — 5

Physics ±3 —

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [x] Accurate answers

Presentation ±1 —

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1 —

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Yun-Ju Wu (TW) — 5

Physics ±3 — +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 — +1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1 — +1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: J Stage: 2 Problem no.: 3

Juror: A. Vatterlaus Signature: A. Vatterlaus

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: RO — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — -1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — -1/2

- ☑ Quality of experimental technique(s)
- ☑ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☑ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: SE — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1/2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: TW — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 8

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: J Stage: 2 Problem no.: 3

Juror: Declan Alvaro Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 — -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 4

Opp.: Sweden — 5

Physics ±3 — +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 7

Rev.: Taiwan — 5

Physics ±3 — 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 5

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: J Stage: 2 Problem no.: 3

Juror: Chan Ang Park Signature: Chan Ang Park

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania — 5

Physics ±3 +1.0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Sweden — 5

Physics ±3 0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1.0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☑ Overall impression +1.0

Opponent ±1 +1.0

- ☑ Response to the reporter's solution +0.2
- ☑ Shows the strong and weak points of the report +0.3
- ☑ Finds shortcomings or errors in the report +0.2
- ☑ Relevance of the questions +0.3
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Taiwan — 5

Physics ±3 0 ~~+0.5~~

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable round up
- ☐ Appropriate manner
- ☑ Overall impression +0.5

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 6

Scoring Guidelines

Fight (Round no.): 5 Room: 7 Stage: 3 Problem no.: 1

Juror: Lobyshev Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 +2

- [x] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 −1

- [x] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reporter ±1 +2

- [x] Quality of experimental technique(s)
- [ ] Structure
- [ ] Explanation of formulae and symbols
- [x] Appropriate models, conformity of dimensions
- [ ] Slides, on-site experiments, audio, video, as appropriate
- [ ] References, proper citations of ideas and input of others
- [ ] Novelty of the report
- [ ] Contribution to the discussion

Final Grade: Reporter **8**

Opp.: Taiwan — 5

Physics ±3 +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Opponent ±1

- [ ] Response to the reporter's solution
- [ ] Shows the strong and weak points of the report
- [ ] Finds shortcomings or errors in the report
- [ ] Relevance of the questions
- [ ] Contribution to the discussion

Final Grade: Opponent **7**

Rev.: Romania — 5

Physics ±3 +1

- [ ] Correct and relevant physics
- [ ] Scientific approach
- [ ] Validity of conclusions
- [ ] Accurate answers

Presentation ±1 +1

- [ ] Clear and understandable
- [ ] Appropriate manner
- [ ] Overall impression

Reviewer ±1

- [ ] Provides a thorough review of report and discussion
- [ ] Expresses own opinion about topics presented or discussed
- [ ] Relevance of questions to both the reporter and the opponent
- [ ] Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **7**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: J Stage: 3 Problem no.: 1

Juror: Maslechko a. Signature:

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles and appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SE (Sabrina Yee Wang) — 5

Physics ±3 +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter **9**

Opp.: Wei-Tao Chen (Taiwan) — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☑ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☑ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☑ Contribution to the discussion

Final Grade: Opponent **8**

Rev.: Horia Măgureanu (Romania) — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +1

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☑ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer **8**

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: J Stage: 3 Problem no.: 1

Juror: X. Vaterlaus Signature: X. Vaterlaus

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

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- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SE — 5

Physics ±3 — 2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 — 1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter — 9

Opp.: TW — 5

Physics ±3 — 1½

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 — 1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent — 8

Rev.: RO — 5

Physics ±3 — 1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 — 1½

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 — 1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer — 7

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: J Stage: 3 Problem no.: 1

Juror: Declan Alvaro Signature: [signature]

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts***, ***theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts***, ***theories***, ***principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Taiwan — 5

Physics ±3 +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent ±1 +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Romania — 5

Physics ±3 −1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer ±1 0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 4

Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): 5 Room: J Stage: 3 Problem no.: 1

Juror: ChanOungPark Signature: ChanOungPark

A report should include:

• a ***presentation*** of the appropriate ***concepts, theories and principles*** of the problem • an ***explanation*** of the ***observed phenomena*** • an ***application*** of ***appropriate mathematics*** • reasonable **experimental technique** to ***gather*** and ***record data*** (or ***demonstrate*** the ***phenomena*** if appropriate) • linking of ***theoretical*** and ***experimental findings*** to draw ***suitable conclusions*** • an attempt to communicate ***difficult*** or ***complex*** ideas in an ***effective*** and ***understandable*** manner

An opposition should show that:

• the opponent ***challenged*** the ***reporter's understanding*** of the presented ***concepts, theories*** and ***principles*** • the opponent understood the ***appropriate mathematics*** presented • the opponent ***critiqued*** the ***experimental technique*** used and questioned the ***validity*** of the ***data*** • the opponent appreciated and highlighted the ***strengths and weaknesses*** of the report

A review should show that:

• the reviewer succeeded in giving an ***objective summary*** of the performances the ***reporter*** and ***opponent*** • the reviewer appreciated the ***important aspects*** (especially the ***controversial*** ones) • the reviewer's ***personal opinion*** was in evidence (***not*** just ***superficial observations***) • such personal opinions were ***informative***, ***non-trivial*** and demonstrated, where possible, the reviewer's ***understanding*** of ***concepts, theories, principles*** and ***appropriate mathematics*** used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for ***physics***, ***presentation*** and for their ***specific role***.
- The ***reporter***, ***opponent*** and ***reviewer*** each ***start with 5 points***.
- Consider the following ***suggestions*** to ***add*** to or ***deduct*** from the initial ***5 points***.
- Select each partial grade from each section and ***write it*** in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden — 5

Physics ±3 +1.0

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter ±1 +1.0

- ☑ Quality of experimental technique(s) +1.0
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: ~~Taiwan~~ Taiwan — 5

Physics ±3 +1.0

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Opponent ±1 +0.5

- ☐ Response to the reporter's solution
- ☑ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Romania — 5

Physics ±3 +1.0

- ☑ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation ±1 +0.5

- ☐ Clear and understandable
- ☑ Appropriate manner
- ☐ Overall impression

Reviewer ±1 +0.5

- ☐ Provides a thorough review of report and discussion
- ☑ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please **do not bend**

Final Grade: Reviewer 7

Round: 5 Room: J Fight Assistants: 杨鹏宇 Pengyu Yang

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	TW	RO	SE	RO	SE	TW	SE	TW	RO			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Valentin Lobyshev	7	7	9	5	6	7	8	7	7			
Anastasiia Maslechko	7	6	8	3	7	8	9	8	8			
Andreas Vaterlaus	7	8	7	4	8	8	9	8	7			
Peter Jenei												
Declan Alvaro	9	7	8	4	7	5	8	8	4			
Chan Oung Park	7	7	8	4	7	6	7	7	7			
Acting Team Member	Chung-Chun Hsieh	TUDOR CIOBANU	Sabrina Yue Wang	HORIA MĂGUREANU	Alexander Åkesson	Yun-Ju, Wu	Sabrina Yue Wang	Wei-Tao Chen	HORIA MĂGUREANU			
Rejected Problems												
Accepted Problem	13			3			1					

Signature Fight Assistant: ..... Double-checked with Scoring Guidelines by ~~second Fight Assistant~~ Chair (signature): .....

First Name	Last Name	Conflicts with	Chair / Experience	Signature
Dmitrii	Agarkov	Russia, Ukraine	no IYPT Experience	was a participant (IYPT 2006)
Alan	Allinson	Australia	Chair	
Declan	Alvaro	United Arab Emirates / India	no IYPT Experience	
Ivan	Antsipau	Belarus	Chair	
Valiantsin	Astashynski	Belarus		
Samuel	Byland	Switzerland	Chair	
Eduardo	Casalli	Brazil	no IYPT Experience	
Max	Chalfin	United Kingdom	no IYPT Experience	
Iat Neng	Chan	Macao	no IYPT Experience	
Teimuraz	Chichua	Georgia		
Tim	Croxford	Australia	no IYPT Experience	
Francis Ejike	Ekwenta	Nigeria		→
Kim	Freimann	Sweden	Chair	
Lars	Gislen	Sweden		
Leszek	Gladczuk	Poland	no IYPT Experience	
Tatyana	Gonçalves Stankevicius	Brasil	no IYPT Experience	
Mihály	Hömöstrei	Hungary		
Yung-Yuan	Hsu	Taiwan		
Olga	Inisheva	Russia	2012 TLJ	Team leader (1997-2013)
Peter	Jenei	Hungary	no IYPT Experience	
Gavin	Jennings	New Zealand (+ UK ?)	Chair	
David	Kell	United Kingdom	no IYPT Experience	
Pavol	Kubinec	Slovakia	no IYPT Experience	
Frantisek	Kundracik	Slovakia	Chair	
Markus	Kunesch	Austria		
Myeung Hoi	Kwon	Korea		
Assen	Kyuldjiev	Bulgaria	Chair	
George	Laskhishvili	Georgia		
Jakob	Lavrod	Sweden		
ChuanYong	Li	China	Chair	
Thomas	Lindner	Austria	Chair	
Valentin	Lobyshev	Russia	Chair	
Prapun	Manyum	Thailand		
Hugo	Marrochio	Brasil	no IYPT Experience	
Ilya	Martchenko	Russia, Switzerland, Sweden	Chair	
Steve	Martin	United Kingdom	no IYPT Experience	
Anastasiia	Maslechko	Ukraine	no IYPT Experience	
Ilana	Massarek	Switzerland		
Mladen	Matev	Bulgaria	no IYPT Experience	
Craig	McDonagh	United Kingdom	no IYPT Experience	
Worawat	Meevasana	Thailand	no experience	
Andrzej	Nadolny	Poland		
Susan	Napier	New Zealand	no IYPT Experience	
Philip	O'Neill	Australia	Chair	
Florian	Ostermaier	Germany	~~Chair~~ if urgently needed	
Stanislav	Panos	Czech Republic		
Dagmar	Panosova	Czech Republic		
Chan Oung	Park	Korea		
Kerry	Parker	New Zealand	IYPT NZ	
Maksym	Pashko	Ukraine	no IYPT Experience	
Martin	Plesch	Slovakia	Chair	
Nirut	Pussadee	Thailand	experience	
Ulrike	Regner	Austria	Chair	
Rainer	Reichle	Germany		
Andrey	Shchetnikov	Russia		
Feng	Song	China	Chair	
Qian	Sun	China	chair	→ ?
Guan Kheng	Sze	Singapore	no IYPT Experience	
Igor	Timoshchenko	Belarus		
Mark	Tocknell	United Kingdom	no IYPT Experience	
Felicia	Ullstad	Sweden	IYPT experience	
Andreas	Vaterlaus	Switzerland	IYPT exp.	
Qing	Ye	China		
Ye	Yeo	Singapore		
Kreso	Zadro	Croatia	Chair	
Kathryn	Zealand	Australia	Chair	

Taiwan Alexandra IOVANOVICI

Taiwan Romania

chair ~~first~~ first time

Idrien-chung Kao

C



27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Poland
1st choice:	No. 1, Invent Yourself
2nd choice:	No. ,
3rd choice:	No. ,
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Anna Weld

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Bulgaria
1st choice:	No. 10, Coefficient of diffusion
2nd choice:	No. 2, Hologram
3rd choice:	No. 4, Ball sound
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature: _____

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

27

H

20 14 UK IYPT

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Nigeria
1st choice:	No. 7, Pot-in-pot refrigerator
2nd choice:	No. 11, Candle Power Plant
3rd choice:	No. 16, Magnetic Brakes
4th choice:	No. ' ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

4

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Korea
1st choice:	No. 16, Magnetic Brakes
2nd choice:	No. 8, Freezing Droplets
3rd choice:	No. 1, Invent Yourself
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature: _____

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

H 9

20 14 UK IYPT

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	AUSTRIA
1st choice:	No. 13, Rotating Saddle
2nd choice:	No. 16, Magnetic Brakes
3rd choice:	No. 1, Invent Yourself
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

3

f

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	China
1st choice:	No. 2, Hologram
2nd choice:	No. 5, Loaded Hoop
3rd choice:	No. 1, Invent Yourself.
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature: Zhao Yi Xiu 赵亦修

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

F 13

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Switzerland
1st choice:	No. 3, Twisted Rope
2nd choice:	No. 9, Water Bombs
3rd choice:	No. 15, Oil Stars
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Heimbach

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

15

F

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Brazil
1st choice:	No. 10, Coefficient of Diffusion
2nd choice:	No. 13, Rotating Saddle
3rd choice:	No. 06, Bubble Crystal
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

7

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Taiwan
1st choice:	No. 13, Rotating Saddle
2nd choice:	No. 4, Ball Sound
3rd choice:	No. 2, Hologram
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

7

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	SWEDEN
1st choice:	No. 1, Invent Yourself
2nd choice:	No. 4, Ball sound
3rd choice:	No. 8, Freezing droplet
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

25

J

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Romania
1st choice:	No. 1, Invent yourself
2nd choice:	No. 3, Twisted rope
3rd choice:	No. 11, Candle Power Plant
4th choice:	No. 8, Freezing droplets

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature: Ciobanu

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

E 1

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Singapore
1st choice:	No. 16, Magnetic Brakes
2nd choice:	No. ,
3rd choice:	No. ,
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Li Bingjian

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

E 5

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	New Zealand
1st choice:	No. 12, Cold Balloon
2nd choice:	No. 5, Loaded Hoop
3rd choice:	No. ,
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature: M Templer

Team Captain

Problems of the 27th IYPT:

~~1. Invent yourself~~
~~2. Hologram~~
3. Twisted rope
4. Ball sound
5. Loaded hoop
~~6. Bubble crystal~~
7. Pot-in-pot refrigerator
8. Freezing droplets
~~9. Water bombs~~
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

26

E

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Macao
1st choice:	No. , Magnetic brakes
2nd choice:	No. , Candle Power Plant
3rd choice:	No. , Twisted Rope
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature: 关 [illegible]

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

A

20 14 UK IYPT

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	SLOVAKIA
1st choice:	No. 8, Freezing droplet
2nd choice:	No. 1, Invent Yourself
3rd choice:	No. 4, Ball sound
4th choice:	No. 13, Rotating saddle

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Matej Bel

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

A 12

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	UK
1st choice:	No. 4 , Ball Sound
2nd choice:	No. 14 , Rubber ~~Band~~ Motor
3rd choice:	No. 8 , Freezing Droplet
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Transi Jing

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

4

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team: AUSTRALIA	
1st choice:	No. 12, Cold Balloon
2nd choice:	No. 5, Loaded Hoop
3rd choice:	No. 2, Hologram
4th choice:	No. 6, Bubble Crystal

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

22

4

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	SLOVENIA
1st choice:	No. 13, ROTATING SADDLE
2nd choice:	No. 10, COEFFICIENT OF DIFFUSION
3rd choice:	No. 11, CANDLE POWER PLANT
4th choice:	No. 17, CHOCHOLATE HYSTERESIS

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature: Uroš Prešern

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

D

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	GERMANY
1st choice:	No. 16, Magnetic brakes
2nd choice:	No. ~~03~~, ~~Twisted rope~~ 14. Rubber motor
3rd choice:	No. , 03. Twisted rope
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

20 14 UK IYPT

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team: CZ	Czech Republic
1st choice:	No. 1, Invent yourself
2nd choice:	No. 17, Chocolate hysteresis
3rd choice:	No. 15, Oil stars
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature: Masaki

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

20 14 UK IYPT



27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	THAILAND
1st choice:	No. 12, Cold Balloon
2nd choice:	No. 3, Twisted Rope
3rd choice:	No. 2, Hologram.
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature: Pamin Taechoyotin

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

I

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Russia
1st choice:	No. 6, Bubble crystal
2nd choice:	No. 16, Magnetic brakes
3rd choice:	No. 4, Ball sound
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

I

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Hungary
1st choice:	No. 9, Water bombs
2nd choice:	No. 2, Hologram
3rd choice:	No. 7, Pot-in-pot refrigerator
4th choice:	No. 6, Bubble crystal

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	UKRAINE
1st choice:	No. 16, Magnetic brakes
2nd choice:	No. 12, Cold balloon
3rd choice:	No. 6, Bubble crystal
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

9

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Belarus ?
1st choice:	No. 2, Hologram
2nd choice:	No. 5, Loaded hoop
3rd choice:	No. 1, Invent yourself
4th choice:	No. ,

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature: _____

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

G

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	Georgia
1st choice:	No. , 5
2nd choice:	No. , 1.
3rd choice:	No. , 12.
4th choice:	No. , 11

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

Please give this form to one of the organizers as soon as possible!

Signature:

G. Tsereteli

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

4

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	UAE ?
1st choice:	No. ~~5~~, ~~Loaded Hoop~~
2nd choice:	No. 7, Pot-in-Pot refrigerator
3rd choice:	No. 14, Rubber Motor
4th choice:	No. 3, Twisted Rope

For the 5th Selective PF the procedure of challenge is omitted. All teams may choose the problem they want to present. The only exception is that a team may not present a problem, which they presented earlier in the Selective Fights. In case teams of one group choose the same problem, priority is given to the team with the higher TSP (see section XI of the IYPT Regulations). The problem which a team presents in this PF may not be presented again in the Final PF by the same team.

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Signature:

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis



27th International Young Physicists' Tournament

2014

Please state which problem you select for the **final**!

Team:	Singapore
1st choice:	No. 1,
~~2nd choice:~~	~~No. ,~~
~~3rd choice:~~	~~No. ,~~

IYPT-Regulations section IX/3: Within four hours after the announcement of the results of the Selective PFs the teams participating in the Final choose their problems. In case teams choose the same problem, priority is given according to the order of presentation in the Final (see section XII). The choice should be made public immediately.

Please give this form to one of the organizers as soon as possible!

Signature:

_____

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

27th International Young Physicists' Tournament

2014

Please state which problem you select for the **final**!

Team:	China
1st choice:	No. 5, Loaded Hoop
2nd choice:	No. 12, Cold Balloon
~~3rd choice:~~	~~No. ,~~

IYPT-Regulations section IX/3: Within four hours after the announcement of the results of the Selective PFs the teams participating in the Final choose their problems. In case teams choose the same problem, priority is given according to the order of presentation in the Final (see section XII). The choice should be made public immediately.

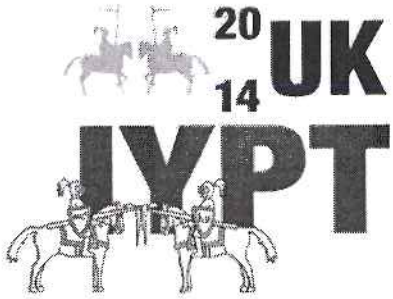
Please give this form to one of the organizers as soon as possible!

Signature: 赵亦修 Zhao Yixiu

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis



27th International Young Physicists' Tournament

2014

Please state which problem you select for the **final**!

Team:	**Slovakia**
1st choice:	No. 16,
2nd choice:	No. 5,
3rd choice:	No. 7,
4th choice	No. 4,

IYPT-Regulations section IX/3: Within four hours after the announcement of the results of the Selective PFs the teams participating in the Final choose their problems. In case teams choose the same problem, priority is given according to the order of presentation in the Final (see section XII). The choice should be made public immediately.

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Signature:

_____

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
10. Coefficient of diffusion
11. Candle Power Plant
12. Cold balloon
13. Rotating saddle
14. Rubber motor
15. Oil stars
16. Magnetic brakes
17. Chocolate hysteresis

27th International Young Physicists' Tournament

2014

Please state which problem you select for the 5th PF!

Team:	CROATIA
1st choice:	No. 4, Ball sound
2nd choice:	No. 14, Rubber Motor
3rd choice:	No. 13, Rotating saddle
4th choice:	No. ,

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Signature: (Vasilije Perović)

Team Captain

Problems of the 27th IYPT:

1. Invent yourself
2. Hologram
3. Twisted rope
4. Ball sound
5. Loaded hoop
6. Bubble crystal
7. Pot-in-pot refrigerator
8. Freezing droplets
9. Water bombs
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15. Oil stars
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