

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 1 Problem no.: 13

Juror: J. BALCOMBE 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.: Mad 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

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

Rev.: Netherlands 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: Reporter

5

Final Grade: Opponent

4

Final Grade: Reviewer

5

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 1 Problem no.: 13

Juror: Angela Fösel Signature: Angela Fösel

A report should include:

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

An opposition should show that:

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

A review should show that:

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

- The grade for each of the three teams consists of a partial grade for **physics, presentation** and for their **specific role**.
- The **reporter, opponent** and **reviewer** each **start with 5 points**.
- Consider the following **suggestions** to **add** to or **deduct** from the initial **5 points**.
- Select each partial grade from each section and **write it** in 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

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

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**

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 1 Problem no.: 13
 Juror: Andreas 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

Opp.: _____ 5

Rev.: _____ 5

Physics ±3

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

0

Physics ±3

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

0

Physics ±3

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

C

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

A

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

0

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

0

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

C

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

1

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

1

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

Final Grade: Reporter

6

Final Grade: Opponent

6

Final Grade: Reviewer

4

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 1 Problem no.: 13

Juror: Jong Tay 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.: Poland
Kocher Wiel. 5

Physics ±3 -2

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

Presentation ±1 ~~1~~

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

Reporter ±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 4

Opp.: Slovenia
Ziga Bosar 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 4

Rev.: Netherlands
Roslyf 5

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.): 2 Room: H Stage: 1 Problem no.: 13

Juror: Xuewei Cao Signature: X. Cao

A report should include:

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

An opposition should show that:

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

A review should show that:

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

- The grade for each of the three teams consists of a partial grade for **physics, presentation** and for their **specific role**.
- The **reporter, opponent** and **reviewer** each **start with 5 points**.
- Consider the following **suggestions** to **add** to or **deduct** from the initial **5 points**.
- Select each partial grade from each section and **write it** in 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

- 0.5
- 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.: Solovnik 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.: Netherlands 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

Final Grade: Reviewer

3

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

Scoring Guidelines

Fight (Round no.): 3 Room: G Stage: 1 Problem no.: 13

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.: Kooper Wiki 5

Opp.: Slovenia 5

Rev.: Netherland 5

Physics ±3

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

Physics ±3

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

Physics ±3

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

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

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

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

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: Reporter

6

Final Grade: Opponent

6

Final Grade: Reviewer

5

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 2 Problem no.: 8

Juror: J. BALCANOPE 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

- 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.: Netherlands 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

- 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

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**

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 2 Problem no.: 8

Juror: Angela Fösel Signature: Angela Fösel

A report should include:

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

An opposition should show that:

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

A review should show that:

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

- The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*.
- The *reporter, opponent* and *reviewer* each *start with 5 points*.
- Consider the following *suggestions* to *add* to or *deduct* from the initial *5 points*.
- Select each partial grade from each section and *write it* in 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

-1

Opp.: _____ 5

Physics ±3

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

-0,5

Rev.: _____ 5

Physics ±3

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

1

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

0

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

0

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

-1

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

0

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

-0,5

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

0

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

Final Grade: Reporter

4

Final Grade: Opponent

4

Final Grade: Reviewer

8,5

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 2 Problem no.: 8

Juror: Andreas Verdenhaus Signature: A. Verdenhaus

A report should include:

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

An opposition should show that:

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

A review should show that:

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

- The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*.
- The *reporter, opponent* and *reviewer* each *start with 5 points*.
- Consider the following *suggestions* to *add* to or *deduct* from the initial *5 points*.
- Select each partial grade from each section and *write it* in 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

0

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

0

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

0

Final Grade: Reporter

5

Opp.: _____ 5

Physics ±3

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

1

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

0

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

0

Final Grade: Opponent

4

Rev.: _____ 5

Physics ±3

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

0

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

0

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

-1

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**

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 2 Problem no.: 8

Juror: Jouy Ten Signature: Jon

- A report should include:**
- a *presentation* of the appropriate *concepts, theories and principles* of the problem • an *explanation* of the *observed phenomena* • an *application* of *appropriate mathematics* • reasonable *experimental technique* to *gather* and *record data* (or *demonstrate* the *phenomena* if appropriate) • linking of *theoretical* and *experimental findings* to draw *suitable conclusions* • an attempt to communicate *difficult* or *complex* ideas in an *effective* and *understandable* manner
- An opposition should show that:**
- the opponent *challenged* the *reporter's understanding* of the presented *concepts, theories and principles* • the opponent understood the *appropriate mathematics* presented • the opponent *critiqued* the *experimental technique* used and questioned the *validity* of the *data* • the opponent appreciated and highlighted the *strengths and weaknesses* of the report
- A review should show that:**
- the reviewer succeeded in giving an *objective summary* of the performances the *reporter and opponent* • the reviewer appreciated the *important aspects* (especially the *controversial* ones) • the reviewer's *personal opinion* was in evidence (*not just superficial observations*) • such personal opinions were *informative, non-trivial* and demonstrated, where possible, the reviewer's *understanding* of *concepts, theories, principles and appropriate mathematics* used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*.
- The *reporter, opponent* and *reviewer* each *start with 5 points*.
- Consider the following *suggestions* to *add* to or *deduct* from the initial *5 points*.
- Select each partial grade from each section and *write it* in 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

6

Opp.: Netherlands 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.: Poland 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

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**

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 2 Problem no.: 8

Juror: Xuewei Cao Signature: Xuewei Cao

- A report should include:**
- a *presentation* of the appropriate *concepts, theories and principles* of the problem • an *explanation* of the *observed phenomena* • an *application* of *appropriate mathematics* • reasonable *experimental technique* to *gather* and *record data* (or *demonstrate* the *phenomena* if appropriate) • linking of *theoretical* and *experimental findings* to draw *suitable conclusions* • an attempt to communicate *difficult* or *complex* ideas in an *effective* and *understandable* manner
- An opposition should show that:**
- the opponent *challenged* the *reporter's understanding* of the presented *concepts, theories and principles* • the opponent understood the *appropriate mathematics* presented • the opponent *critiqued* the *experimental technique* used and questioned the *validity* of the *data* • the opponent appreciated and highlighted the *strengths and weaknesses* of the report
- A review should show that:**
- the reviewer succeeded in giving an *objective summary* of the performances the *reporter and opponent* • the reviewer appreciated the *important aspects* (especially the *controversial* ones) • the reviewer's *personal opinion* was in evidence (*not just superficial observations*) • such personal opinions were *informative, non-trivial* and demonstrated, where possible, the reviewer's *understanding of concepts, theories, principles and appropriate mathematics* used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*.
- The *reporter, opponent* and *reviewer* each *start with 5 points*.
- Consider the following *suggestions* to *add* to or *deduct* from the initial *5 points*.
- Select each partial grade from each section and *write it* in 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 6

Opp.: Netherlands 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.: Poland 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.): 3 Room: H 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.: Makeskdm 5

Physics ± 3 -1

- Correct and relevant physics
- Scientific approach simple
- 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.: Glon Muldee 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 3

Rev.: Yakub 5

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

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**

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 3 Problem no.: 11
 Juror: J. BALCOMBE Signature: JB

A report should include:

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

An opposition should show that:

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

A review should show that:

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

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

Rep.: Netherlands 5

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.: 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 5

Rev.: Slovenia 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

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**

Scoring Guidelines

Fight (Round no.): 3 Room: 4 Stage: 3 Problem no.: 11

Juror: Angela Fösel Signature: Angela Fösel

A report should include:

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

An opposition should show that:

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

A review should show that:

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

- The grade for each of the three teams consists of a partial grade for **physics, presentation** and for their **specific role**.
- The **reporter, opponent** and **reviewer** each **start with 5 points**.
- Consider the following **suggestions** to **add** to or **deduct** from the initial **5 points**.
- Select each partial grade from each section and **write it** in 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

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

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

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**

Scoring Guidelines

Fight (Round no.): 3 Room: 3 Stage: H Problem no.: 11
 Juror: X. Valerious Signature: X. Valerious

A report should include:

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

An opposition should show that:

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

A review should show that:

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

- The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*.
- The *reporter, opponent* and *reviewer* each *start with 5 points*.
- Consider the following *suggestions* to *add* to or *deduct* from the initial *5 points*.
- Select each partial grade from each section and *write it* in 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

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

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

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**

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 3 Problem no.: 11

Juror: Jouy Tan Signature: Jouy Tan

- A report should include:**
- a **presentation** of the appropriate **concepts, theories and principles** of the problem • an **explanation** of the **observed phenomena** • an **application** of **appropriate mathematics** • reasonable **experimental technique** to **gather** and **record data** (or **demonstrate** the **phenomena** if appropriate) • linking of **theoretical** and **experimental findings** to draw **suitable conclusions** • an attempt to communicate **difficult** or **complex** ideas in an **effective** and **understandable** manner
- An opposition should show that:**
- the opponent **challenged** the **reporter's understanding** of the presented **concepts, theories and principles** • the opponent understood the **appropriate mathematics** presented • the opponent **critiqued** the **experimental technique** used and questioned the **validity** of the **data** • the opponent appreciated and highlighted the **strengths and weaknesses** of the report
- A review should show that:**
- the reviewer succeeded in giving an **objective summary** of the performances the **reporter and opponent** • the reviewer appreciated the **important aspects** (especially the **controversial** ones) • the reviewer's **personal opinion** was in evidence (**not just superficial observations**) • such personal opinions were **informative, non-trivial** and demonstrated, where possible, the reviewer's **understanding of concepts, theories, principles and appropriate mathematics** used by the reporter and the opponent

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

Rep.: Netherlands 5
Peter Neder.

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 4

Opp.: Poland 5
Kamil Konopko

Physics ± 3 -10

- 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.: Novelia 5
Maria Kales

Physics ± 3 -7

- 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

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 3 Problem no.: 11

Juror: Xuewei Cao Signature: Xuewei Cao

A report should include:

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

An opposition should show that:

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

A review should show that:

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

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

Rep.: Netherlands 5

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 2

Opp.: 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

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 -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

Final Grade: Reviewer 3

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

Scoring Guidelines

Fight (Round no.): 3 Room: H Stage: 3 Problem no.: 11

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.: Netherlands 5

Physics ±3

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

-2

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

+1

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

+1/2

Final Grade: Reporter

2

Opp.: Slovenia ^{Poland} 5

Physics ±3

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

~~5~~

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

-1/3

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

+1

Final Grade: Opponent

2

Rev.: Poland ^{Slovenia} 5

Physics ±3

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

~~5~~

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

+0

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

-0

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**