

FINAL

Fight Assistants: Michelle Form

Juror	Team	Stage 1			Stage 2			Stage 3		
		Salzburgsk Rep	Hungary Opp	Poland Rev	Hungary Rep	Poland Opp	Salzburgsk Rev	Poland Rep	Salzburgsk Opp	Hungary Rev
N. Plesch		8	6	5	9	5	6	7	5	6
D. Keller		7	6	5	7	8	7	8	6	6
E. Scharberleib		7	6	7	8	7	6	7	5	6
M. Tazreker		8	7	8	8 9	9	6	9	9	9
E. Widmann		8	8	7	10	8	9	9	8	9
C. Denkler		8	6	6	7	5	6	8	6	8
F. Volkmann		7	4	3	9	5	7	6	6	9
K. Ingang		9	8	5	9	3	8	7	8	8
R. Scheiber		8	6	8	8	6	9	6	9	8
Acting Team Member		Amir Dellali	Morten Vavrík	Michał Kubacki	Sara Crowing	Bartłomiej Lewandowski	Jonathan Hell	Filip Kubacki	Valentin Wiesiger	Phyllida Hamilton-Merle
Chosen Problem		7 Spiral Waves			2 Balloon Airhorn			13 Resounding Glass		

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

Scoresheet

Fight (Round no.): FIN Room: / Stage: 1 Problem no.: 7
 Juror: Robert Scheiber 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 process data* (or *demonstrate the phenomena* if appropriate)
- linking of *theoretical* and *experimental findings*
- drawing *suitable conclusions*
- an attempt to communicate *difficult or complex* ideas in an *effective* and *understandable* manner
- *task fulfillment* to a reasonable degree (when applicable)

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent and reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add to or deduct* from the initial *5 points*.

Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sabzburg 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 +1

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: Hungary 5

Physics ±3 +1/2

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

Presentation ±1 /

- 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 and prioritises them
- Relevance of the questions -
- Contribution to the discussion

Rev.: Poland 5

Physics ±3 +2

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

Presentation ±1 /

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ±1 +1

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 8

7-8-9

Final Grade: Opponent 6

5-7-8

Final Grade: Reviewer 8

Scoresheet

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

Juror: PUESCU Signature: _____

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent and reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add to or deduct* from the initial *5 points*.

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 _____ 0,75

- Clear and understandable
- Appropriate manner
- Overall impression

Reporter ±1 _____ 0,75

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: _____ 5

Physics ±3 _____ 0,5

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

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: _____ 5

Physics ±3 _____ 1

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

Presentation ±1 _____ -0,75

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ±1 _____ 0

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 8

Final Grade: Opponent 6

Final Grade: Reviewer 5

Scoresheet

Fight (Round no.): 4 Room: _____ Stage: 1 Problem no.: 7

Juror: D. Keller Signature: D. Keller

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add* to or *deduct* from the initial *5 points*.

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 _____ +2

Physics ± 3 _____ 0

Physics ± 3 _____ 0

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

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

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

Presentation ± 1 _____ 0

Presentation ± 1 _____ 0

Presentation ± 1 _____ 0

- Clear and understandable
- Appropriate manner
- Overall impression

- Clear and understandable
- Appropriate manner
- Overall impression

- Clear and understandable
- Appropriate manner
- Overall impression

Reporter ± 1 _____ 0

Opponent ± 1 _____ +1

Reviewer ± 1 _____ 0

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

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

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 7

Final Grade: Opponent 6

Final Grade: Reviewer 5

Scoresheet

Fight (Round no.): Final Room: Stage: 1 Problem no.:
 Juror: E. Schertelkeib Signature: ES

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add* to or *deduct* from the initial *5 points*.

Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SALZBURG 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

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: HUNGARY 5

Physics ±3 0.5

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

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: POLAND 5

Physics ±3 1

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

Presentation ±1 0

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ±1 1/2

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 7

Final Grade: Opponent 6

Final Grade: Reviewer 7

Scoresheet

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

Juror: _____ Signature: Martin Tazewider

A report should include:

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

An opposition should show that:

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

A review should show that:

- the reviewer succeeded in giving an *objective summary* of the performances the *reporter and opponent*
- the reviewer appreciated the *important aspects* (especially the *controversial* ones)
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- such personal opinions were *informative, 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 grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent and reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add* to or *deduct* from the initial *5 points*.

Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Salzburg α 5

Opp.: Hungary 5

Rev.: Poland 5

Physics ±3 +2.5

Physics ±3 1

Physics ±3 +3

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

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

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

Presentation ±1 +1

Presentation ±1 0

Presentation ±1 0

- Clear and understandable
- Appropriate manner
- Overall impression

- Clear and understandable
- Appropriate manner
- Overall impression

- Clear and understandable
- Appropriate manner
- Overall impression

Reporter ±1 +0.5

Opponent ±1 1

Reviewer ±1 +1

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

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

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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

9

Final Grade: Opponent

7

Final Grade: Reviewer

9

Scoresheet

Fight (Round no.): 7 Room: _____ Stage: 1 Problem no.: 7
 Juror: E. Widmann 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 *process data* (or *demonstrate the phenomena* if appropriate)
- linking of *theoretical* and *experimental findings*
- drawing *suitable conclusions*
- an attempt to communicate *difficult* or *complex* ideas in an *effective* and *understandable* manner
- *task fulfillment* to a reasonable degree (when applicable)

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add* to or *deduct* from the initial *5 points*.

Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Salzburg 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

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: Hungary 5

Physics ± 3 2

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

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: Poland 5

Physics ± 3 2

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

Presentation ± 1 0

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ± 1 0

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 8

Final Grade: Opponent 8

Final Grade: Reviewer 7

Scoresheet

Fight (Round no.): Final Room: _____ Stage: 1 Problem no.: 7

Juror: DEINLEIN Signature: Deinlein

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for **physics, presentation** and for their **specific role**. The **reporter, opponent** and **reviewer** each **start with 5 points**. Write your partial grade for each section in the corresponding shadowed box to **add** to or **deduct** from the initial **5 points**.

Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Salzburg 5

Physics ± 3 +1

- Correct and relevant physics *no wrong leading, no doll up good*
- Scientific approach *using parameters on flight experiments +2*
- Validity of conclusions *answered all questions*
- Accurate answers, if applicable

Presentation ± 1 +1

- Clear and understandable
- Appropriate manner
- Overall impression

Reporter ± 1 +1

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols *using, but never stolen?*
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: Hungary 5

Physics ± 3 +1
-1

- Correct and relevant physics *no wrong leading, no doll up good*
- Scientific approach *no wrong leading, no doll up good*
- Validity of conclusions *really asked*
- Accurate answers, if applicable

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: Poland 5

Physics ± 3 +1

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

Presentation ± 1 -1

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ± 1 +1

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent *like RE numbers, surface tension*

This 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 8

Final Grade: Opponent 6

Final Grade: Reviewer 6

Scoresheet

Fight (Round no.): F Room: Aud Stage: 1 Problem no.: 7
 Juror: VALKA 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 *process data* (or *demonstrate* the *phenomena* if appropriate)
 - linking of *theoretical* and *experimental findings*
 - drawing *suitable conclusions*
 - an attempt to communicate *difficult* or *complex* ideas in an *effective* and *understandable* manner
 - *task fulfillment* to a reasonable degree (when applicable)
- An opposition should show that:**
- the opponent *challenged* the *reporter's understanding* of the presented *concepts, theories and principles*
 - the opponent understood the *appropriate mathematics* presented
 - the opponent *critiqued* the *experimental technique* used and questioned the *validity* of the *data*
 - the opponent appreciated and highlighted the *strengths and weaknesses* of the report
 - evaluated the *task fulfillment* (when applicable)
- A review should show that:**
- the reviewer succeeded in giving an *objective summary* of the performances the *reporter and opponent*
 - the reviewer appreciated the *important aspects* (especially the *controversial* ones)
 - the reviewer's *personal opinion* was in evidence (*not just superficial observations*)
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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.: Saltzburg A 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

- Logical structure ~
 - Testing of hypotheses, appropriate models ~/+
 - Novelty of the report +
 - Quality of experimental technique(s), errors estimation +
 - Explanation of formulae and symbols
 - Slides, on-site experiments, audio, video, as appropriate +
 - References, proper citations of ideas and input of others
 - Contribution to the discussion +
 - Solution responded to the task +
- model not connected to data

Opp.: Hungary 5

Physics ±3 0

- Correct and relevant physics
- Scientific approach ~/+
- Validity of conclusions ~
- Accurate answers, if applicable

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 and prioritises them
 - Relevance of the questions ~/+
 - Contribution to the discussion ~
- unclear discussion of the model
+ no good comparison of model to data

Rev.: Poland 5

Physics ±3 -0,5

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

Presentation ±1 -1

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

Reviewer ±1 -0,5

- Provides a concise and objective review of report, opponent's critical remarks and discussion
 - Expresses own opinion about topics presented or discussed
 - Relevance of questions to both the reporter and the opponent
 - Draws attention to points missed by the reporter or the opponent
- + good question about
in let will use collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

Final Grade: Reporter 7

Final Grade: Opponent 4

Final Grade: Reviewer 3

Scoresheet

Fight (Round no.): Final Room: _____ Stage: 1 Problem no.: 7

Juror: IRGANG Blum 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 process data** (or **demonstrate the phenomena** if appropriate)
- linking of **theoretical** and **experimental findings**
- drawing **suitable conclusions**
- an attempt to communicate **difficult or complex** ideas in an **effective and understandable** manner
- **task fulfillment** to a reasonable degree (when applicable)

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for **physics, presentation** and for their **specific role**. The **reporter, opponent and reviewer** each **start with 5 points**. Write your partial grade for each section in the corresponding shadowed box to **add to or deduct** from the initial **5 points**.

Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Solzburg 5

Physics ±3 +2

- Correct and relevant physics ++
- Scientific approach +
- Validity of conclusions + *morely*
- Accurate answers + *paraphrasing*

Presentation ±1 +1

- Clear and understandable
- Appropriate manner +
- Overall impression

Reporter ±1 +1

- Logical structure +
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), *errors estimation* +
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate +
- References, proper citations of ideas and input of others +
- Contribution to the discussion +
- Solution responded to the task +

Opp.: Hungary 5

Physics ±3 +1.5

- Correct and relevant physics
- Scientific approach +
- Validity of conclusions
- Accurate answers, if applicable

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

- *declaring questions!*
you asked theory at the declaration part!

Rev.: _____ 5

Physics ±3 +1

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

Presentation ±1 0

- Clear and understandable
- Appropriate manner ✓
- Overall impression *hands off!*

Reviewer ±1 -1

- Provides a concise and objective review of report, opponent's critical remarks and discussion ✓
- Expresses own opinion about topics presented or discussed +
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

- *clarifying 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: Reporter 9

Final Grade: Opponent 8

Final Grade: Reviewer 5

Scoresheet

Fight (Round no.): 7 Room: F Stage: 2 Problem no.: _____
 Juror: PLUSA Signature: _____

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add to or deduct* from the initial *5 points*.

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

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: _____ 5

Physics ± 3 _____ 1

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

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: _____ 5

Physics ± 3 _____ 0.5

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

Presentation ± 1 _____ 0.5

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ± 1 _____ 0

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 3

Final Grade: Opponent 5

Final Grade: Reviewer 6

Scoresheet

Fight (Round no.): _____ Room: _____ Stage: _____ Problem no.: _____

Juror: P. Keller Signature: P. Keller

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for **physics, presentation** and for their **specific role**. The **reporter, opponent** and **reviewer** each **start with 5 points**. Write your partial grade for each section in the corresponding shadowed box to **add to or deduct** from the initial **5 points**.

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

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: _____ 5

Physics ±3 _____ +1

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

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: _____ 5

Physics ±3 _____ +1

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

Presentation ±1 _____ +1

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ±1 _____ 0

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 7

Final Grade: Opponent 8

Final Grade: Reviewer 7

Scoresheet

Fight (Round no.): Final Room: _____ Stage: 2 Problem no.: 2

Juror: E. Scherterkerb 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 *process data* (or *demonstrate* the *phenomena* if appropriate) • linking of *theoretical* and *experimental findings* • drawing *suitable conclusions* • an attempt to communicate *difficult* or *complex* ideas in an *effective* and *understandable* manner • *task fulfillment* to a reasonable degree (when applicable)

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent and reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add to or deduct* from the initial *5 points*.

Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: HUN 5

Opp.: POL 5

Rev.: Satzburg α 5

Physics ±3 1

Physics ±3 1

Physics ±3 1/2

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

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

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

Presentation ±1 1

Presentation ±1 1/2

Presentation ±1 0

- Clear and understandable
- Appropriate manner
- Overall impression

- Clear and understandable
- Appropriate manner
- Overall impression

- Clear and understandable
- Appropriate manner
- Overall impression

Reporter ±1 1/2

Opponent ±1 1/2

Reviewer ±1 1/2

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

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

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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

8

Final Grade: Opponent

7

Final Grade: Reviewer

6

Scoresheet

Fight (Round no.): Finals Room: _____ Stage: 2 Problem no.: 2

Juror: Tazreiter Signature: Jarlin Tazreiter

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add* to or *deduct* from the initial *5 points*.

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 +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

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: Poland 5

Physics ± 3 2.5

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

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: Salzburg 5

Physics ± 3 0

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

Presentation ± 1 0

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ± 1 +1

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 9

Final Grade: Opponent 9

Final Grade: Reviewer 6

Scoresheet

Fight (Round no.): 7 Room: _____ Stage: 2 Problem no.: 2
 Juror: E. Widmann 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 *process data* (or *demonstrate* the *phenomena* if appropriate) • linking of *theoretical* and *experimental findings* • drawing *suitable conclusions* • an attempt to communicate *difficult* or *complex* ideas in an *effective* and *understandable* manner • *task fulfillment* to a reasonable degree (when applicable)

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add to or deduct* from the initial *5 points*.

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 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

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: Poland 5

Physics ± 3 2

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

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: Salzburg 5

Physics ± 3 2

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

Presentation ± 1 1

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ± 1 1

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- ✓ Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 10

Final Grade: Opponent 8

Final Grade: Reviewer 9

Scoresheet

Fight (Round no.): Final Room: _____ Stage: 2 Problem no.: 2

Juror: DEINLEIN Signature: Deinlein

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add* to or *deduct* from the initial *5 points*.

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 *theory + experiment together*
- Validity of conclusions
- Accurate answers

Presentation ± 1

- Clear and understandable
- Appropriate manner
- Overall impression

Reporter ± 1

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

- time not fully used → overview again in end

Opp.: Poland 5

Physics ± 3 -1

- Correct and relevant physics
- Scientific approach
- Validity of conclusions
- Accurate answers, if applicable *not to opposite reviewer*

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

- so much on vibrating parts

Rev.: Solzburg 5

Physics ± 3 0.5
0.5

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

Presentation ± 1 0.5

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ± 1 -0.5

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

repeated the opponent -

This 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 7

Final Grade: Opponent 5

Final Grade: Reviewer 6

Scoresheet

Fight (Round no.): F Room: Aud Stage: 2 Problem no.: 2
 Juror: VALKA 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 **process data** (or **demonstrate** the **phenomena** if appropriate)
- linking of **theoretical** and **experimental findings**
- drawing **suitable conclusions**
- an attempt to communicate **difficult** or **complex** ideas in an **effective** and **understandable** manner
- **task fulfillment** to a reasonable degree (when applicable)

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for **physics, presentation** and for their **specific role**. The **reporter, opponent and reviewer** each **start with 5 points**. Write your partial grade for each section in the corresponding shadowed box to **add to or deduct** from the initial 5 points.

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 +2

- Correct and relevant physics $+ / +$
- Scientific approach $+ / +$
- Validity of conclusions \sim
- Accurate answers $+ /$
+ loads in theory / discussed

Presentation ± 1 +1

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

Reporter ± 1 +1

- Logical structure $+$
- Testing of hypotheses, appropriate models $+$
- Novelty of the report $+$
- Quality of experimental technique(s), errors estimation $+$
- Explanation of formulae and symbols $+$
- Slides, on-site experiments, audio, video, as appropriate $+$
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task $+$
+ investigated many parameters

Opp.: _____ 5

Physics ± 3 -0.5

- Correct and relevant physics $+ / + / +$
- Scientific approach $+ / + / +$
- Validity of conclusions $-$
- Accurate answers, if applicable $+$

Presentation ± 1 -0.5

- Clear and understandable $\sim / -$
- Appropriate manner $+ / \sim$
- Overall impression $-$
- too insecure used filling words

Opponent ± 1 +0.5

- Response to the reporter's solution $+ / \sim / -$
- Shows the strong and weak points of the report $+$
- Finds shortcomings or errors in the report and prioritises them \sim
- Relevance of the questions $+$
- Contribution to the discussion $\sim / -$
+ own theory presented

Rev.: _____ 5

Physics ± 3 +0.5

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

Presentation ± 1 0

- Clear and understandable \sim
- Appropriate manner
- Overall impression $\sim / -$

Reviewer ± 1 +1

- Provides a concise and objective review of report, opponent's critical remarks and discussion $+$
- Expresses own opinion about topics presented or discussed $+ / +$
- Relevance of questions to both the reporter and the opponent $+$
- Draws attention to points missed by the reporter or the opponent

This 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 9

Final Grade: Opponent 5

Final Grade: Reviewer 7

Scoresheet

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

Juror: IRGANG Klaus Signature: Klaus Meyer

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent and reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add* to or *deduct* from the initial 5 points.

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 +2

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

Presentation ±1 +1

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

Reporter ±1 +1

- Logical structure +
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols +
- Slides, on-site experiments, audio, video, as appropriate +
- References, proper citations of ideas and input of others
- Contribution to the discussion +
- Solution responded to the task

to be consistent with Sateburg 2

Opp.: Poland 5

Physics ±3 -1

- Correct and relevant physics
- Scientific approach + largely disagree
- Validity of conclusions
- Accurate answers, if applicable

Presentation ±1 -0.5

- Clear and understandable
- Appropriate manner → too much
- Overall impression fight! -
too fast, too much talking

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 and prioritises them
- Relevance of the questions -
- Contribution to the discussion

- *clarifying questions?*

Rev.: Sateburg 2 5

Physics ±3 +2

- Correct and relevant physics
- Scientific approach + opinion, resonance
- Validity of conclusions
- Accurate answers, if applicable

Presentation ±1 +0.5

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ±1 +0.5

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed ✓
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 9

Final Grade: Opponent 3

Final Grade: Reviewer 8

Scoresheet

Fight (Round no.): FIN Room: 1 Stage: 2 Problem no.: 2
 Juror: Robert Scheiber 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 *process data* (or *demonstrate* the *phenomena* if appropriate) • linking of *theoretical* and *experimental findings* • drawing *suitable conclusions* • an attempt to communicate *difficult* or *complex* ideas in an *effective* and *understandable* manner • *task fulfillment* to a reasonable degree (when applicable)

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent and reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add to or deduct* from the initial 5 points.

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

- Logical structure +
- Testing of hypotheses, appropriate models +
- Novelty of the report +
- Quality of experimental technique(s), errors estimation +
- Explanation of formulae and symbols +
- Slides, on-site experiments, audio, video, as appropriate +
- References, proper citations of ideas and input of others +
- Contribution to the discussion ~
- Solution responded to the task +

Opp.: Poland 5

Physics ± 3 /

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

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 and prioritises them +
- Relevance of the questions +
- Contribution to the discussion ~

Rev.: Salzburg 5

Physics ± 3 +2

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

Presentation ± 1 +1

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ± 1 +1

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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

8

Final Grade: Opponent

6

Final Grade: Reviewer

9

Scoresheet

Fight (Round no.): F Room: F Stage: 3 Problem no.: 13
 Juror: PRESCA 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 process data* (or *demonstrate the phenomena* if appropriate)
- linking of *theoretical* and *experimental findings*
- drawing *suitable conclusions*
- an attempt to communicate *difficult or complex* ideas in an *effective* and *understandable* manner
- *task fulfillment* to a reasonable degree (when applicable)

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add to or deduct* from the initial *5 points*.

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 _____ 0.5

- Clear and understandable
- Appropriate manner
- Overall impression

Reporter ±1 _____ +0.5

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: _____ 5

Physics ±3 _____ 0

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

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: _____ 5

Physics ±3 _____ 0

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

Presentation ±1 _____ 0.5

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ±1 _____ +0.5

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 7

Final Grade: Opponent 5

Final Grade: Reviewer 6

Scoresheet

Fight (Round no.): _____ Room: _____ Stage: _____ Problem no.: _____

Juror: P. Keller Signature: A. Bell

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent and reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add to or deduct* from the initial *5 points*.

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

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: _____ 5

Physics ±3 _____ +1

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

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: _____ 5

Physics ±3 _____ 0

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

Presentation ±1 _____ +1

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ±1 _____ 0

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 8

Final Grade: Opponent 6

Final Grade: Reviewer 6

Scoresheet

Fight (Round no.): Final Room: _____ Stage: 3 Problem no.: 10

Juror: E. Scherstedt Signature: E. Scherstedt

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent and reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add to or deduct* from the initial *5 points*.

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

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: _____ 5

Physics ±3 _____ -1/2

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

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: _____ 5

Physics ±3 _____ 0

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

Presentation ±1 _____ 1/2

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ±1 _____ 0

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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

7

Final Grade: Opponent

5

Final Grade: Reviewer

6

Scoresheet

Fight (Round no.): Finals Room: _____ Stage: 3 Problem no.: 13

Juror: Tazreiter Signature: Martin Tazreiter

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add* to or *deduct* from the initial *5 points*.

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 +1

- Clear and understandable
- Appropriate manner
- Overall impression

Reporter ± 1 +1

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: Salzburg 5

Physics ± 3 +2

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

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: Hungary 5

Physics ± 3 +2

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

Presentation ± 1 +1

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ± 1 +1

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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

9

Final Grade: Opponent

9

Final Grade: Reviewer

9

Scoresheet

Fight (Round no.): 7 Room: _____ Stage: 3 Problem no.: 13
 Juror: E. Widmann 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 *process data* (or *demonstrate* the *phenomena* if appropriate) • linking of *theoretical* and *experimental findings* • drawing *suitable conclusions* • an attempt to communicate *difficult* or *complex* ideas in an *effective* and *understandable* manner • *task fulfillment* to a reasonable degree (when applicable)
- An opposition should show that:**
- the opponent *challenged* the *reporter's understanding* of the presented *concepts, theories and principles* • the opponent understood the *appropriate mathematics* presented • the opponent *critiqued* the *experimental technique* used and questioned the *validity* of the *data* • the opponent appreciated and highlighted the *strengths and weaknesses* of the report • evaluated the *task fulfillment* (when applicable)
- A review should show that:**
- the reviewer succeeded in giving an *objective summary* of the performances the *reporter and opponent* • the reviewer appreciated the *important aspects* (especially the *controversial* ones) • the reviewer's *personal opinion* was in evidence (*not just superficial observations*) • such personal opinions were *informative, non-trivial* and demonstrated, where possible, the reviewer's *understanding* of *concepts, theories, principles and appropriate mathematics* used by the reporter and the opponent • evaluated the *task fulfillment* (when applicable)

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add* to or *deduct* from the initial *5 points*.

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 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

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: Saltbury 5

Physics ±3 2

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

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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

Rev.: Hungary 5

Physics ±3 3

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

Presentation ±1 0.5

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ±1 0.5

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 9

Final Grade: Opponent 8

Final Grade: Reviewer 9

Scoresheet

Fight (Round no.): Final Room: _____ Stage: 3 Problem no.: 13

Juror: DEINLEIN Signature: Deinlein

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add to or deduct* from the initial *5 points*.

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 heavy exp. +1
- Validity of conclusions +1.5
- Accurate answers → 0.5

Presentation ±1

- Clear and understandable
- Appropriate manner
- Overall impression

Reporter ±1 +1

- ✓ Logical structure
- ✓ Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation
- ✓ Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate
- ✓ References, proper citations of ideas and input of others
- Contribution to the discussion
- Solution responded to the task

Opp.: Salzburg 5

Physics ±3 +1

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

Presentation ±1

- 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 and prioritises them
- Relevance of the questions
- Contribution to the discussion

*nice summary of report
only few points were -
discussed (4-5)*

Rev.: Hungary 5

Physics ±3 +1

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

Presentation ±1 +1

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ±1 +1

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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

8

Final Grade: Opponent

6

Final Grade: Reviewer

8

Scoresheet

Fight (Round no.): 1 Room: Aud Stage: 3 Problem no.: 73
 Juror: VALERIA Signature:

A report should include:

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

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add* to or *deduct* from the initial *5 points*.

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 \sim
- Scientific approach \sim
- Validity of conclusions
- Accurate answers $+$

Presentation ± 1 0

- Clear and understandable $+/\sim/-$
- Appropriate manner
- Overall impression $\sim/+/\sim$

Reporter ± 1 +0,5

- Logical structure \sim
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental \sim technique(s), errors estimation \sim
- Explanation of formulae and symbols
- Slides, on-site experiments, audio, video, as appropriate $+/\sim$
- References, proper citations of ideas and input of others
- Contribution to the discussion $+$
- Solution responded to the task $+/\sim$

Opp.: Salzburg a 5

Physics ± 3 0

- Correct and relevant physics $+$
- Scientific approach $+/\sim$
- Validity of conclusions \sim
- Accurate answers, if applicable

Presentation ± 1 0

- Clear and understandable \sim
- Appropriate manner
- Overall impression

Opponent ± 1 +0,5

- Response to the reporter's solution $\sim/+/\sim$
- Shows the strong and weak points of the report $+$
- Finds shortcomings or errors in the report and prioritises them
- Relevance of the questions $\sim/+$
- Contribution to the discussion \sim

Rev.: Hungary 5

Physics ± 3 +2

- Correct and relevant physics $+$
- Scientific approach $+/\sim$
- Validity of conclusions \sim
- Accurate answers, if applicable

Presentation ± 1 +1

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

Reviewer ± 1 +1

- Provides a concise and objective review of report, opponent's $+/\sim/+$ critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent $+$
- Draws attention to points missed by the reporter or the opponent $+/\sim$

This 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 9

Scoresheet

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

Juror: IRGANU Klaus Signature: Klaus Irjanu

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add* to or *deduct* from the initial *5 points*.

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

- Logical structure
- Testing of hypotheses, appropriate models
- Novelty of the report
- Quality of experimental technique(s), errors estimation (✓)
- Explanation of formulae and symbols (✓)
- Slides, on-site experiments, audio, video, as appropriate (✓)
- References, proper citations of ideas and input of others
- Contribution to the discussion (✓)
- Solution responded to the task

Opp.: Slovenia 5

Physics ±3 +1

- Correct and relevant physics
- Scientific approach (✓)
- Validity of conclusions (✓) many good points
- Accurate answers, if applicable (✓) error bars

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 and prioritises them
 - Relevance of the questions (✓)
 - Contribution to the discussion (✓)
- ↳ difficult to tackle the very good presentation*

Rev.: Hungary 5

Physics ±3 +1

- Correct and relevant physics (✓)
- Scientific approach (✓)
- Validity of conclusions
- Accurate answers, if applicable

Presentation ±1 +1

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ±1 +1

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics presented or discussed
- Relevance of questions to both the reporter and the opponent
- Draws attention to points missed by the reporter or the opponent

This 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 7

Final Grade: Opponent 8

Final Grade: Reviewer 8

Scoresheet

Fight (Round no.): FIN Room: / Stage: 3 Problem no.: 13
 Juror: Robert Sdeiber 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 *process data* (or *demonstrate* the *phenomena* if appropriate) • linking of *theoretical* and *experimental findings* • drawing *suitable conclusions* • an attempt to communicate *difficult* or *complex* ideas in an *effective* and *understandable* manner • *task fulfillment* to a reasonable degree (when applicable)

An opposition should show that:

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

A review should show that:

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

The grade for each of the three teams consists of a partial grade for *physics, presentation* and for their *specific role*. The *reporter, opponent* and *reviewer* each *start with 5 points*. Write your partial grade for each section in the corresponding shadowed box to *add* to or *deduct* from the initial 5 points.

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 +1/2

- Clear and understandable
- Appropriate manner
- Overall impression

Reporter ±1 +1/2

- Logical structure +
- Testing of hypotheses, appropriate models +
- Novelty of the report ~
- Quality of experimental technique(s), errors estimation ~
- Explanation of formulae and symbols ~
- Slides, on-site experiments, audio, video, as appropriate +
- References, proper citations of ideas and input of others ?
- Contribution to the discussion ~
- Solution responded to the task +

Opp.: Salzburg 5

Physics ±3 +3/5

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

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 and prioritises them +
- Relevance of the questions +
- Contribution to the discussion +

Rev.: Hungary 5

Physics ±3 +1

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

Presentation ±1 +1

- Clear and understandable
- Appropriate manner
- Overall impression

Reviewer ±1 +1

- Provides a concise and objective review of report, opponent's critical remarks and discussion
- Expresses own opinion about topics 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: Reporter 6

6-7

Final Grade: Opponent 9

8-9

Final Grade: Reviewer 8

8-9

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