

# SCORESHEET

REPORTER Start from 1 and add/subtract  
 1 + 3.5 + 2.5 - 0.5 = 7

stage: 1  
 reporter: Germany

fight (round no.): 3  
 opponent: Czech R.

room: D  
 reviewer: UK

problem no.: 17

Juror's name: Wee Wei Hsing  
 signature: *HW*

REPORT	phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfilment
0	almost no	almost no	too few	no/ almost no	others' data, incorrectly cited	misunderstood
1	some	some	some	some	review of sources, cited	partly
2	fair	fair	fair	not well fitting	some own input	average
3	good	good	well performed, sufficient number	deviations qualitatively analysed	some interesting results	interesting solution
4	detailed	quite detailed, correct	+ results explained errors analysed	+ theory limits explained, conclusive	considerable experimental or theoretical	some aspects above average
5	demonstrative	detailed, complex, completely testable	+ reproducible, convincing analysis	well fitting, deviations analysed, conclusive	considerable experimental and theoretical	greater extent than expected
6	deep and comprehensible, shows physical insight					

DISCUSSION WITH OPPONENT	scientific contribution	relevant arguments/responses	efficiency
0	almost no	too few	almost no, chaotic
1	only technical	some	avoided some questions
2	points cleared	many	cooperated well
3	some scientific points cleared	+ data/theory	answered directly to most questions
4	interesting points discussed	convincingly supported	efficient, productive
5	brought in new physics	proved deep understanding	

ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS	
0	concise and correct or no questions asked
-1	some incorrect, inconclusive or too long
-2	deeply incorrect or show deep misconceptions

NOTES: Good introduction. Theoretical model includes air resistance? Use ballistic pendulum to estimate velocity of projectile. Magnetic deflection? Destabiliser? Projectile motion?

Good summary on the optimization of muzzle velocity. Did not account for air flow around projectile, friction → friction negligible.

OPPONENT Start from 1 and add/subtract  
 1 + 1 + 2.2 + 2.2 - 0 = 6

QUESTIONS ASKED	
0	almost no, irrelevant
1	some relevant, aimed at resolving some unclear points
2	short allowing short answers, prioritized, all time used

OPPOSITION (SPEECH)	time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation
0	almost no	almost nothing	no or irrelevant	almost no	no
1	very little	some main points	few	some	almost no
2	not all	main points	some	to important topics	some
3	almost all	all relevant points	many	to most topics	reasonable
4	all & efficiently	practically all points	practically all	+ improvement suggestions	very good

DISCUSSION WITH REPORTER	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation
0	almost no	irrelevant	very little	almost no	no
1	little	some	some	to some extent	almost no
2	partial	average	some correct	leading or cooperative	some
3	good	many	many correct	quite efficient	reasonable
4	new crucial point(s)	almost all	+ improvement suggestions	very efficient	very good

ANSWERS TO JURY and REVIEWER'S QUESTIONS	
0	concise and correct or no questions asked
-1	some incorrect, inconclusive or too long
-2	deeply incorrect or show deep misconceptions

NOTES: Turbulence? Compressibility of air? Good and relevant summary on the difference between vacuum cleaner and vacuum pump? Measurement of the muzzle velocity in the tube or external to the tube? Inert?

momentum of inertia? (projectile rotation relevant?) X. On turbulence relevant? X. Understood the reporter's results fairly well. - lack of own opinion: either good or bad.

REVIEWER Start from 1 and add/subtract  
 1 + 1.8 + 2 + 2 - 0 = 7

QUESTIONS ASKED	
0	too few, mostly irrelevant
1	some relevant, sufficient number, could clear things out
2	most time used, many unclear points resolved, aimed at both rep. and opp.
3	+short, apt and clear, well prioritized time managed efficiently

REVIEW OF REPORT	report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation
0	poor	almost no	too few	irrelevant	no
1	partial	too short/long	some	partially relevant	almost no
2	good	relevant parts	many	mostly adequate	some
3	detailed, complex	accurate, conclusive	+ improvement suggestions	fully adequate	good

REVIEW OF OPPOSITION	speech summary	discussion analysis	own opinions	pros & cons	prioritisation
0	poor	almost no	too few	irrelevant	no
1	too short/long	too short/long	some	partially relevant	almost no
2	informative, apt	relevant parts	many	mostly adequate	some
3	brief but accurate	accurate, conclusive	+ improvement suggestions	fully adequate	good

ANSWERS TO JURY QUESTIONS	
0	concise and correct or no questions asked
-1	some incorrect, inconclusive or too long
-2	deeply incorrect or show deep misconceptions

NOTES: Conservation of energy applicable to the ballistic pendulum.

projectile shape could be varied ✓

valid point on factor opinion.

Question on turbulence?

Good summary understood both presentations fairly well.

# SCORESHEET

REPORTER Start from 1 and add/subtract  
 1 +  $\boxed{2.4}$  +  $\boxed{2.0}$  -  $\boxed{0.7}$  =  $\boxed{4.7}$   $\approx 5$

stage:  $\boxed{1}$   
 reporter: *Germany*

fight (round no.):  $\boxed{3}$  room:  $\boxed{D}$   
 opponent: *Czech Republic* reviewer: *U.K*

problem no.:  $\boxed{17}$  Juror's name: *Narvit*  
 signature: *27-5*

REPORT						DISCUSSION WITH OPPONENT			ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfilment	scientific contribution	relevant arguments/responses	efficiency	
0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> no/ almost no	0 <input type="checkbox"/> others' data, incorrectly cited	0 <input type="checkbox"/> misunderstood	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> almost no, chaotic	
1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> review of sources, cited	1 <input type="checkbox"/> partly	1 <input type="checkbox"/> only technical	1 <input type="checkbox"/> some	1 <input type="checkbox"/> avoided some questions	
2 <input checked="" type="checkbox"/> fair	2 <input checked="" type="checkbox"/> fair	2 <input checked="" type="checkbox"/> fair	2 <input checked="" type="checkbox"/> not well fitting	2 <input checked="" type="checkbox"/> some own input	2 <input checked="" type="checkbox"/> average	2 <input checked="" type="checkbox"/> some scientific	2 <input checked="" type="checkbox"/> many	2 <input checked="" type="checkbox"/> cooperated well	
3 <input checked="" type="checkbox"/> good	3 <input checked="" type="checkbox"/> good	3 <input checked="" type="checkbox"/> well performed, sufficient number	3 <input checked="" type="checkbox"/> deviations qualitatively analysed	3 <input checked="" type="checkbox"/> some interesting results	3 <input checked="" type="checkbox"/> interesting solution	3 <input checked="" type="checkbox"/> interesting points	3 <input checked="" type="checkbox"/> + data/theory	3 <input checked="" type="checkbox"/> answered directly	
4 <input type="checkbox"/> detailed demonstrative	4 <input type="checkbox"/> quite detailed, correct	4 <input type="checkbox"/> + results explained errors analysed	4 <input type="checkbox"/> + theory limits explained, conclusive	4 <input type="checkbox"/> considerable experimental or theoretical	4 <input type="checkbox"/> some aspects above average	4 <input type="checkbox"/> discussed	4 <input type="checkbox"/> convincingly supported	4 <input type="checkbox"/> to most questions	
5 <input type="checkbox"/> deep and comprehensible, shows physical insight	5 <input type="checkbox"/> detailed, complex, completely testable	5 <input type="checkbox"/> + reproducible, convincing analysis	5 <input type="checkbox"/> well fitting, deviations analysed, conclusive	5 <input type="checkbox"/> considerable experimental and theoretical	5 <input type="checkbox"/> greater extent than expected	5 <input type="checkbox"/> brought in new physics	5 <input type="checkbox"/> proved deep understanding	5 <input type="checkbox"/> efficient, productive	

NOTES: *Sebastian*

OPPONENT Start from 1 and add/subtract  
<sup>0.9</sup>  
 1 +  ~~$\boxed{1.2}$~~  +  ~~$\boxed{1.2}$~~  +  $\boxed{4.3}$  -  $\boxed{0.2}$  =  $\boxed{5.6}$   $\approx 6$

QUESTIONS ASKED		OPPOSITION (SPEECH)					DISCUSSION WITH REPORTER					ANSWERS TO JURY and REVIEWER'S QUESTIONS
0 <input type="checkbox"/>	1 <input checked="" type="checkbox"/>	time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation	
0 <input type="checkbox"/> almost no, irrelevant	0 <input type="checkbox"/> some relevant, aimed at resolving	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> almost nothing	0 <input type="checkbox"/> no or irrelevant	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> very little	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no	0 <input checked="" type="checkbox"/> concise and correct or no questions asked
1 <input checked="" type="checkbox"/> some unclear points	1 <input type="checkbox"/> short allowing short answers, prioritized, all time used	1 <input type="checkbox"/> very little	1 <input type="checkbox"/> some main points	1 <input type="checkbox"/> few	1 <input type="checkbox"/> some	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> little	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> to some extent	1 <input type="checkbox"/> almost no	1 <input checked="" type="checkbox"/> some incorrect, inconclusive or too long
2 <input type="checkbox"/>	2 <input type="checkbox"/>	2 <input type="checkbox"/> not all	2 <input type="checkbox"/> main points	2 <input checked="" type="checkbox"/> some	2 <input type="checkbox"/> to important topics	2 <input checked="" type="checkbox"/> some	2 <input type="checkbox"/> partial	2 <input checked="" type="checkbox"/> average	2 <input checked="" type="checkbox"/> some correct	2 <input type="checkbox"/> leading or cooperative	2 <input checked="" type="checkbox"/> some	2 <input type="checkbox"/>
3 <input type="checkbox"/>	3 <input type="checkbox"/>	3 <input checked="" type="checkbox"/> almost all	3 <input checked="" type="checkbox"/> all relevant points	3 <input type="checkbox"/> many	3 <input type="checkbox"/> to most topics	3 <input type="checkbox"/> reasonable	3 <input type="checkbox"/> good	3 <input type="checkbox"/> many	3 <input type="checkbox"/> many correct	3 <input type="checkbox"/> quite efficient	3 <input type="checkbox"/> reasonable	3 <input type="checkbox"/>
4 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/> all & efficiently	4 <input type="checkbox"/> practically all points	4 <input type="checkbox"/> practically all	4 <input type="checkbox"/> + improvement suggestions	4 <input type="checkbox"/> very good	4 <input type="checkbox"/> new crucial point(s)	4 <input type="checkbox"/> almost all	4 <input type="checkbox"/> + improvement suggestions	4 <input type="checkbox"/> very efficient	4 <input type="checkbox"/> very good	4 <input type="checkbox"/>

NOTES: *Pavel*

REVIEWER Start from 1 and add/subtract  
 1 +  $\boxed{1.8}$  +  $\boxed{2.2}$  +  $\boxed{1.9}$  -  $\boxed{0.1}$  =  $\boxed{6.8}$   $\approx 7$

QUESTIONS ASKED		REVIEW OF REPORT					REVIEW OF OPPOSITION					ANSWERS TO JURY QUESTIONS
0 <input type="checkbox"/>	1 <input type="checkbox"/>	report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	speech summary	discussion analysis	own opinions	pros & cons	prioritisation	
0 <input type="checkbox"/> too few, mostly irrelevant	0 <input type="checkbox"/> some relevant, sufficient number, could clear things out	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> no	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> no	0 <input checked="" type="checkbox"/> concise and correct or no questions asked
1 <input type="checkbox"/>	1 <input checked="" type="checkbox"/> most time used, many unclear points resolved, aimed at both rep. and opp.	1 <input type="checkbox"/> partial	1 <input type="checkbox"/> too short/long	1 <input type="checkbox"/> some	1 <input type="checkbox"/> partially relevant	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> too short/long	1 <input type="checkbox"/> too short/long	1 <input type="checkbox"/> some	1 <input type="checkbox"/> partially relevant	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/>
2 <input checked="" type="checkbox"/>	2 <input type="checkbox"/> +short, apt and clear, well prioritized time managed efficiently	2 <input checked="" type="checkbox"/> good	2 <input checked="" type="checkbox"/> relevant parts	2 <input checked="" type="checkbox"/> many	2 <input checked="" type="checkbox"/> mostly adequate	2 <input checked="" type="checkbox"/> some	2 <input type="checkbox"/> informative, apt	2 <input checked="" type="checkbox"/> relevant parts	2 <input checked="" type="checkbox"/> many	2 <input type="checkbox"/> mostly adequate	2 <input checked="" type="checkbox"/> some	2 <input type="checkbox"/>
3 <input type="checkbox"/>	3 <input type="checkbox"/>	3 <input type="checkbox"/> detailed, complex	3 <input type="checkbox"/> accurate, conclusive	3 <input type="checkbox"/> + improvement suggestions	3 <input type="checkbox"/> fully adequate	3 <input type="checkbox"/> good	3 <input type="checkbox"/> brief but accurate	3 <input type="checkbox"/> accurate, conclusive	3 <input type="checkbox"/> + improvement suggestions	3 <input type="checkbox"/> fully adequate	3 <input type="checkbox"/> good	3 <input type="checkbox"/>

NOTES: *Ben*

# SCORESHEET

Vacuum Bazooka

REPORTER Start from 1 and add/subtract  
 1 + **4** + **2** - **0** = **7**

stage: fight (round no.): 3 room: D  
 reporter: Germany opponent: Czech reviewer: UK

problem no.: 17  
 Juror's name: Ng Hui Khuan  
 signature: *Ng Hui Khuan*

REPORT 4						DISCUSSION WITH OPPONENT 2			ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution ?	task fulfilment	scientific contribution	relevant arguments/responses	efficiency	
0 --- almost no	almost no	too few	no/ almost no	others' data, incorrectly cited	misunderstood	0 --- almost no	too few	almost no, chaotic	
1 --- some	some	some	some	review of sources, cited	partly	1 --- only technical	some	avoided some questions	
2 --- fair	fair	fair	not well fitting	some own input	average	2 --- some scientific points cleared	many	cooperated well	
3 --- good	good	well performed, sufficient number	deviations qualitatively analysed	some interesting results	interesting solution	3 --- interesting points discussed	+ data/theory convincingly supported	answered directly to most questions	
4 --- detailed demonstrative	quite detailed, correct	+ results explained / errors analysed	+ theory limits explained, conclusive	considerable experimental or theoretical	some aspects above average	4 --- brought in new physics	proved deep understanding	efficient, productive	
5 --- deep and comprehensible, shows physical insight	detailed, complex, completely testable	+ reproducible, convincing analysis	well fitting, deviations analysed, conclusive	considerable experimental and theoretical	greater extent than expected				

NOTES: very good use of the time for the report. Good answer to question about laminar flow. Interesting means of measuring muzzle velocity.

OPPONENT Start from 1 and add/subtract  
 1 + **1.5** + **3.5** + ~~2~~ - **0** = **8**

QUESTIONS ASKED 1.5		OPPOSITION (SPEECH) 3.5					DISCUSSION WITH REPORTER 2.5					ANSWERS TO JURY and REVIEWER'S QUESTIONS
almost no, irrelevant	some relevant, aimed at resolving some unclear points	time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation	
0 --- almost no, irrelevant	some relevant, aimed at resolving some unclear points	0 --- almost no	almost nothing	no or irrelevant	almost no	no	0 --- almost no	irrelevant	very little	almost no	no	
1 --- some relevant, aimed at resolving some unclear points	short allowing short answers, prioritized, all time used	1 --- very little	some main points	few	some	almost no	1 --- little	some	some	to some extent	almost no	
2 --- short allowing short answers, prioritized, all time used		2 --- not all	main points	some	to important topics	some	2 --- partial	average	some correct	leading or cooperative	some	
		3 --- almost all	all relevant points	many	to most topics	reasonable	3 --- good	many	many correct	quite efficient	reasonable	
		4 --- all & efficiently	practically all points	practically all	+ improvement suggestions	very good	4 --- new crucial point(s)	almost all	+ improvement suggestions	very efficient	very good	

NOTES: didn't get at all to the experiment. Time management was poor. Opponent brought out many details that were not clear and we had a chance to better understand them.

REVIEWER Start from 1 and add/subtract  
 1 + **2.5** + **2.5** + **2** - **0** = **7**

QUESTIONS ASKED 2.5		REVIEW OF REPORT 2.5					REVIEW OF OPPOSITION 2					ANSWERS TO JURY QUESTIONS
too few, mostly irrelevant	some relevant, sufficient number, could clear things out	report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	speech summary	discussion analysis	own opinions	pros & cons	prioritisation	
0 --- too few, mostly irrelevant	most time used, many unclear points resolved, aimed at both rep. and opp.	0 --- poor	almost no	too few	irrelevant	no	0 --- poor	almost no	too few	irrelevant	no	
1 --- clear things out	+short, apt and clear, well prioritized time managed efficiently	1 --- partial	too short/long	some	partially relevant	almost no	1 --- too short/long	too short/long	some	partially relevant	almost no	
2 --- most time used, many unclear points resolved, aimed at both rep. and opp.		2 --- good	relevant parts	many	mostly adequate	some	2 --- informative, apt	relevant parts	many	mostly adequate	some	
3 --- +short, apt and clear, well prioritized time managed efficiently		3 --- detailed, complex	accurate, conclusive	+ improvement suggestions	fully adequate	good	3 --- brief but accurate	accurate, conclusive	+ improvement suggestions	fully adequate	good	

NOTES:

# SCORESHEET

REPORTER Start from 1 and add/subtract  
 1 + 1.5 + 1.5 - 0 = 4

stage: 41  
 reporter: GER

fight (round no.): 11  
 opponent: CBE

room: D  
 reviewer: UK

problem no.: 17

Juror's name: PLGSC4  
 signature:

REPORT						DISCUSSION WITH OPPONENT			ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfillment	scientific contribution	relevant arguments/responses	efficiency	
0 almost no	almost no	too few	no/ almost no	others' data, incorrectly cited	misunderstood	0 almost no	too few	almost no, chaotic	
1 some	some	some	some	review of sources, cited	partly	1 only technical points cleared	some	avoided some questions	
2 fair	fair	fair	not well fitting	some own input	average	2 some scientific points cleared	many	cooperated well	
3 good	good	well performed, sufficient number	deviations qualitatively analysed	some interesting results	interesting solution	3 interesting points discussed	+ data/theory convincingly supported	answered directly to most questions	
4 detailed demonstrative	quite detailed, correct	+ results explained errors analysed	+ theory limits explained, conclusive	considerable experimental or theoretical	some aspects above average	4 brought in new physics	proved deep understanding	efficient, productive	
5 deep and comprehensible, shows physical insight	detailed, complex, completely testable	+ reproducible, convincing analysis	well fitting, deviations analysed, conclusive	considerable experimental and theoretical	greater extent than expected				

NOTES: VC does strange things, so we used VP!

OPPONENT Start from 1 and add/subtract  
 1 + 1.5 + 2.5 + 3 - 0 = 5

QUESTIONS ASKED		OPPOSITION (SPEECH)					DISCUSSION WITH REPORTER					ANSWERS TO JURY and REVIEWER'S QUESTIONS
		time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation	
0 almost no, irrelevant		0 almost no	almost nothing	no or irrelevant	almost no	no	0 almost no	irrelevant	very little	almost no	no	
1 some relevant, aimed at resolving some unclear points		1 very little	some main points	few	some	almost no	1 little	some	some	to some extent	almost no	
2 short allowing short answers, prioritized, all time used		2 not all	main points	some	to important topics	some	2 partial	average	some correct	leading or cooperative	some	
		3 almost all	all relevant points	many	to most topics	reasonable	3 good	many	many correct	quite efficient	reasonable	
		4 all & efficiently	practically all points	practically all	+ improvement suggestions	very good	4 new critical point(s)	almost all	+ improvement suggestions	very efficient	very good	

NOTES: Vacuum pump! flow

REVIEWER Start from 1 and add/subtract  
 1 + 1.5 + 1.5 + 1.5 - 0 = 5

QUESTIONS ASKED		REVIEW OF REPORT <i>Popot Area</i>					REVIEW OF OPPOSITION <i>AsLT Area</i>					ANSWERS TO JURY QUESTIONS
		report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	speech summary	discussion analysis	own opinions	pros & cons	prioritisation	
0 too few, mostly irrelevant		0 poor	almost no	too few	irrelevant	no	0 poor	almost no	too few	irrelevant	no	
1 some relevant, sufficient number, could clear things out		1 partial	too short/long	some	partially relevant	almost no	1 too short/long	too short/long	some	partially relevant	almost no	
2 most time used, many unclear points resolved, aimed at both rep. and opp.		2 good	relevant parts	many	mostly adequate	some	2 informative, apt	relevant parts	many	mostly adequate	some	
3 +short, apt and clear, well prioritized time managed efficiently		3 detailed, complex	accurate, conclusive	+ improvement suggestions	fully adequate	good	3 brief but accurate	accurate, conclusive	+ improvement suggestions	fully adequate	good	

NOTES: Hard to understand NegtIL Re VP can be used

# SCORESHEET

**REPORTER** Start from 1 and add/subtract  
 1 + 2.5 + 1.5 - 0.5 = 5

stage: 1  
 reporter: Germany

fight (round no.): 3  
 opponent: Czech Republic

room: D  
 reviewer: United Kingdom  
 problem no.: 17

Juror's name: Ojan Khatib-Damavandi  
 signature: Ojan Khatib-Damavandi

REPORT						DISCUSSION WITH OPPONENT			ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfilment	scientific contribution	relevant arguments/responses	efficiency	
0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> no/ almost no	0 <input type="checkbox"/> others' data, incorrectly cited	0 <input type="checkbox"/> misunderstood	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> almost no, chaotic	
1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> review of sources, cited	1 <input checked="" type="checkbox"/> partly	1 <input type="checkbox"/> only technical	1 <input checked="" type="checkbox"/> some	1 <input type="checkbox"/> avoided some questions	
2 <input type="checkbox"/> fair	2 <input checked="" type="checkbox"/> fair	2 <input type="checkbox"/> fair	2 <input type="checkbox"/> not well fitting	2 <input type="checkbox"/> some own input	2 <input type="checkbox"/> average	2 <input type="checkbox"/> some scientific	2 <input type="checkbox"/> many	2 <input checked="" type="checkbox"/> cooperated well	
3 <input type="checkbox"/> good	3 <input type="checkbox"/> good	3 <input type="checkbox"/> well performed, sufficient number	3 <input type="checkbox"/> deviations	3 <input type="checkbox"/> some interesting results	3 <input type="checkbox"/> interesting solution	3 <input type="checkbox"/> interesting points	3 <input type="checkbox"/> + data/theory	3 <input type="checkbox"/> answered directly	
4 <input type="checkbox"/> detailed demonstrative	4 <input type="checkbox"/> quite detailed, correct	4 <input type="checkbox"/> + results explained	4 <input type="checkbox"/> + theory limits explained, conclusive	4 <input type="checkbox"/> considerable experimental or theoretical	4 <input type="checkbox"/> some aspects above average	4 <input type="checkbox"/> discussed	4 <input type="checkbox"/> convincingly supported	4 <input type="checkbox"/> to most questions	
5 <input type="checkbox"/> deep and comprehensible, shows physical insight	5 <input type="checkbox"/> detailed, complex, completely testable	5 <input type="checkbox"/> + reproducible, convincing analysis	5 <input type="checkbox"/> well fitting, deviations analysed, conclusive	5 <input type="checkbox"/> considerable experimental and theoretical	5 <input type="checkbox"/> greater extent than expected	5 <input type="checkbox"/> brought in new physics	5 <input type="checkbox"/> proved deep understanding	5 <input type="checkbox"/> efficient, productive	

NOTES: To get theory, changed the experimental setup

**OPPONENT** Start from 1 and add/subtract  
 1 + 1 + 2.5 + 3 - 0 = 8

QUESTIONS ASKED		OPPOSITION (SPEECH)					DISCUSSION WITH REPORTER					ANSWERS TO JURY and REVIEWER'S QUESTIONS
0 <input type="checkbox"/> almost no, irrelevant	1 <input type="checkbox"/> some relevant, aimed at resolving	time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation	
0 <input type="checkbox"/> some unclear points	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> almost nothing	0 <input type="checkbox"/> no or irrelevant	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> very little	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no	0 <input checked="" type="checkbox"/> concise and correct or no questions asked
1 <input type="checkbox"/> short allowing short answers, prioritized, all time used	1 <input type="checkbox"/> very little	1 <input type="checkbox"/> some main points	1 <input type="checkbox"/> some main points	1 <input type="checkbox"/> few	1 <input type="checkbox"/> some	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> little	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> to some extent	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> some incorrect, inconclusive or too long
	2 <input type="checkbox"/> not all	2 <input type="checkbox"/> main points	2 <input type="checkbox"/> main points	2 <input type="checkbox"/> some	2 <input type="checkbox"/> to important topics	2 <input type="checkbox"/> some	2 <input type="checkbox"/> partial	2 <input type="checkbox"/> average	2 <input checked="" type="checkbox"/> some correct	2 <input type="checkbox"/> leading or cooperative	2 <input type="checkbox"/> some	2 <input type="checkbox"/> deeply incorrect or show deep misconceptions
	3 <input checked="" type="checkbox"/> almost all	3 <input type="checkbox"/> all relevant points	3 <input checked="" type="checkbox"/> many	3 <input type="checkbox"/> many	3 <input type="checkbox"/> to most topics	3 <input checked="" type="checkbox"/> reasonable	3 <input type="checkbox"/> good	3 <input checked="" type="checkbox"/> many	3 <input type="checkbox"/> many correct	3 <input type="checkbox"/> quite efficient	3 <input type="checkbox"/> reasonable	
	4 <input type="checkbox"/> all & efficiently	4 <input type="checkbox"/> practically all points	4 <input type="checkbox"/> practically all	4 <input type="checkbox"/> practically all	4 <input type="checkbox"/> + improvement suggestions	4 <input type="checkbox"/> very good	4 <input type="checkbox"/> new crucial point(s)	4 <input type="checkbox"/> almost all	4 <input type="checkbox"/> + improvement suggestions	4 <input type="checkbox"/> very efficient	4 <input type="checkbox"/> very good	

NOTES:

**REVIEWER** Start from 1 and add/subtract  
 1 + 0.5 + 1.5 + 1.5 - 0 = 5

QUESTIONS ASKED		REVIEW OF REPORT					REVIEW OF OPPOSITION					ANSWERS TO JURY QUESTIONS
0 <input type="checkbox"/> too few, mostly irrelevant	1 <input checked="" type="checkbox"/> some relevant, sufficient number, could clear things out	report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	speech summary	discussion analysis	own opinions	pros & cons	prioritisation	
0 <input type="checkbox"/> most time used, many unclear points resolved, aimed at both rep. and opp.	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> no	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> no	0 <input type="checkbox"/> concise and correct or no questions asked
1 <input type="checkbox"/> +short, apt and clear, well prioritized time managed efficiently	1 <input checked="" type="checkbox"/> partial	1 <input type="checkbox"/> too short/long	1 <input checked="" type="checkbox"/> some	1 <input type="checkbox"/> partially relevant	1 <input checked="" type="checkbox"/> almost no	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> too short/long	1 <input type="checkbox"/> too short/long	1 <input checked="" type="checkbox"/> some	1 <input type="checkbox"/> partially relevant	1 <input checked="" type="checkbox"/> almost no	1 <input type="checkbox"/> some incorrect, inconclusive or too long
	2 <input type="checkbox"/> good	2 <input type="checkbox"/> relevant parts	2 <input type="checkbox"/> many	2 <input type="checkbox"/> mostly adequate	2 <input type="checkbox"/> some	2 <input type="checkbox"/> some	2 <input type="checkbox"/> informative, apt	2 <input type="checkbox"/> relevant parts	2 <input type="checkbox"/> many	2 <input type="checkbox"/> mostly adequate	2 <input type="checkbox"/> some	2 <input type="checkbox"/> deeply incorrect or show deep misconceptions
	3 <input type="checkbox"/> detailed, complex	3 <input type="checkbox"/> accurate, conclusive	3 <input type="checkbox"/> + improvement suggestions	3 <input type="checkbox"/> fully adequate	3 <input type="checkbox"/> good	3 <input type="checkbox"/> good	3 <input type="checkbox"/> brief but accurate	3 <input type="checkbox"/> accurate, conclusive	3 <input type="checkbox"/> + improvement suggestions	3 <input type="checkbox"/> fully adequate	3 <input type="checkbox"/> good	

NOTES:

# SCORESHEET

REPORTER Start from 1 and add/subtract  
 1 + 2.5 + 2.5 - 0.5 = 6

stage: 2 fight (round no.): 3  
 reporter: Czeh R. opponent: U.K

room: D reviewer: Germany

problem no.: 16

Juror's name: Wee Wei Hsing  
 signature: *[Signature]*

REPORT						DISCUSSION WITH OPPONENT			ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfilment	scientific contribution	relevant arguments/responses	efficiency	
0 almost no	almost no	too few	no/ almost no	others' data, incorrectly cited	misunderstood	0 almost no	too few	almost no, chaotic	
1 some	some	some	some	review of sources, cited	partly	1 only technical points cleared	some	avoided some questions	
2 fair	fair	fair	not well-fitting	some own input	average	2 some scientific points cleared	many	cooperated well	
3 good	good	well performed, sufficient number	deviations qualitatively analysed	some interesting results	interesting solution	3 interesting points discussed	+ data/theory convincingly supported	answered directly to most questions	
4 detailed demonstrative	quite detailed, correct	+ results explained errors analysed	+ theory limits explained, conclusive	considerable experimental or theoretical	some aspects above average	4 brought in new physics	proved deep understanding	efficient, productive	
5 deep and comprehensible, shows physical insight	detailed, complex, completely testable	+ reproducible, convincing analysis	well fitting, deviations analysed, conclusive	considerable experimental and theoretical	greater extent than expected				

NOTES: Escapement mechanism... Inward are best fitted slide 27 28  
 but not explained parameter  $\mu$  frequency? vs. why is there phase synchronization? No theoretical prediction of regimes of synchronization  
 Dynamic was examined but emphasis on phase dynamics is lacking  
 What is the importance of the escapement mechanism? Not explored  
 Answered mass of base  $\checkmark$

OPPONENT Start from 1 and add/subtract  
 1 + 1.5 + 2 + 1.5 - 0.5 = 6

QUESTIONS ASKED		OPPOSITION (SPEECH)					DISCUSSION WITH REPORTER					ANSWERS TO JURY and REVIEWER'S QUESTIONS
0 almost no, irrelevant	1 some relevant, aimed at resolving	time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	0 almost no	relevance of topics	own opinions presented	efficiency	prioritisation	
1 some unclear points	2 short allowing short answers, prioritized, all time used	0 almost no	almost nothing	no or irrelevant	almost no	no	0 almost no	irrelevant	very little	almost no	no	0 concise and correct or no questions asked
		1 very little	some main points	few	some	almost no	1 little	some	some	to some extent	almost no	1 some incorrect, inconclusive or too long
		2 not all	main points	some	to important topics	some	2 partial	average	some correct	leading or cooperative	some	2 deeply incorrect or show deep misconceptions
		3 almost all	all relevant points	many	to most topics	reasonable	3 good	many	many correct	quite efficient	reasonable	
		4 all & efficiently	practically all points	practically all	+ improvement suggestions	very good	4 new crucial point(s)	almost all	+ improvement suggestions	very efficient	very good	

NOTES: in phase and anti phase synchronization  
 Good go but no follow up? Mass of base  $\uparrow$  synchro the  $\checkmark$   
 Mass of pendulum & spring constant? Interpretation of the pendulum? Not a significant effect

REVIEWER Start from 1 and add/subtract  
 1 + 2.8 + 2.5 + 2.5 - 0.5 = 8

QUESTIONS ASKED		REVIEW OF REPORT					REVIEW OF OPPOSITION					ANSWERS TO JURY QUESTIONS
0 too few, mostly irrelevant	1 some relevant, sufficient number, could clear things out	report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	0 poor	discussion analysis	own opinions	pros & cons	prioritisation	
2 most time used, many unclear points resolved, aimed at both rep. and opp.	3 +short, apt and clear, well prioritized time managed efficiently	0 poor	almost no	too few	irrelevant	no	0 poor	almost no	too few	irrelevant	no	0 concise and correct or no questions asked
		1 partial	too short/long	some	partially relevant	almost no	1 too short/long	too short/long	some	partially relevant	almost no	1 some incorrect, inconclusive or too long
		2 good	relevant parts	many	mostly adequate	some	2 informative, apt	relevant parts	many	mostly adequate	some	2 deeply incorrect or show deep misconceptions
		3 detailed, complex	accurate, conclusive	+ improvement suggestions	fully adequate	good	3 brief but accurate	accurate, conclusive	+ improvement suggestions	fully adequate	good	

NOTES: Number of notations  
 Amplitude affects frequency. Escapement not essential to synchronization?  $\times$   
 - Coupled oscillators are not the same as synchronized oscillators  
 eigenmodes remain time invariant  
 - Non-invariant introduced by the escapement in context of synchronization

# SCORESHEET

REPORTER Start from 1 and add/subtract

$$1 + 1.5 + 1.3 - 0.2 = 3.6 \approx 4$$

stage: 2  
reporter: Czech

fight (round no.): 3  
opponent: U.K

room: D  
reviewer: Germany  
problem no.: 16

Juror's name: Nari't  
signature: [Signature]

REPORT						DISCUSSION WITH OPPONENT			ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfilment	scientific contribution	relevant arguments/responses	efficiency	
0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> no/ almost no	0 <input type="checkbox"/> others' data, incorrectly cited	0 <input type="checkbox"/> misunderstood	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> almost no, chaotic	
1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> review of sources, cited	1 <input type="checkbox"/> partly	1 <input type="checkbox"/> only technical	1 <input type="checkbox"/> some	1 <input type="checkbox"/> avoided some	
2 <input type="checkbox"/> fair	2 <input type="checkbox"/> fair	2 <input type="checkbox"/> fair	2 <input type="checkbox"/> not well fitting	2 <input type="checkbox"/> some own input	2 <input type="checkbox"/> average	2 <input type="checkbox"/> points cleared	2 <input type="checkbox"/> many	2 <input type="checkbox"/> questions	
3 <input type="checkbox"/> good	3 <input type="checkbox"/> good	3 <input type="checkbox"/> well performed, sufficient number	3 <input type="checkbox"/> deviations	3 <input type="checkbox"/> some interesting results	3 <input type="checkbox"/> interesting solution	3 <input type="checkbox"/> some scientific	3 <input type="checkbox"/> + data/theory	3 <input type="checkbox"/> cooperated well	
4 <input type="checkbox"/> detailed demonstrative	4 <input type="checkbox"/> quite detailed, correct	4 <input type="checkbox"/> + results explained, errors analysed	4 <input type="checkbox"/> qualitatively analysed	4 <input type="checkbox"/> + theory limits explained, conclusive	4 <input type="checkbox"/> considerable experimental or theoretical	4 <input type="checkbox"/> interesting points discussed	4 <input type="checkbox"/> + data/theory convincingly supported	4 <input type="checkbox"/> answered directly to most questions	
5 <input type="checkbox"/> deep and comprehensible, shows physical insight	5 <input type="checkbox"/> detailed, complex, completely testable	5 <input type="checkbox"/> + reproducible, convincing analysis	5 <input type="checkbox"/> well fitting, deviations analysed, conclusive	5 <input type="checkbox"/> well fitting, deviations analysed, conclusive	5 <input type="checkbox"/> considerable experimental and theoretical	5 <input type="checkbox"/> brought in new physics	5 <input type="checkbox"/> proved deep understanding	5 <input type="checkbox"/> efficient, productive	

NOTES: Pavel

OPPONENT Start from 1 and add/subtract

$$1 + 1.3 + 2.2 + 2.1 - 0 = 6.6 \approx 7$$

QUESTIONS ASKED		OPPOSITION (SPEECH)					DISCUSSION WITH REPORTER					ANSWERS TO JURY and REVIEWER'S QUESTIONS
0 <input type="checkbox"/>	1 <input type="checkbox"/>	time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation	
0 <input type="checkbox"/> almost no, irrelevant	0 <input type="checkbox"/> some relevant, aimed at resolving	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> almost nothing	0 <input type="checkbox"/> no or irrelevant	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> very little	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no	0 <input type="checkbox"/> concise and correct or no questions asked
1 <input type="checkbox"/> some unclear points	1 <input type="checkbox"/> short allowing short answers, prioritized, all time used	1 <input type="checkbox"/> very little	1 <input type="checkbox"/> some main points	1 <input type="checkbox"/> few	1 <input type="checkbox"/> some	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> little	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> to some extent	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> some incorrect, inconclusive or too long
2 <input type="checkbox"/>	2 <input type="checkbox"/>	2 <input type="checkbox"/> not all	2 <input type="checkbox"/> main points	2 <input type="checkbox"/> some	2 <input type="checkbox"/> to important topics	2 <input type="checkbox"/> some	2 <input type="checkbox"/> partial	2 <input type="checkbox"/> average	2 <input type="checkbox"/> some correct	2 <input type="checkbox"/> leading or cooperative	2 <input type="checkbox"/> some	2 <input type="checkbox"/> deeply incorrect or show deep misconceptions
3 <input type="checkbox"/>	3 <input type="checkbox"/>	3 <input type="checkbox"/> almost all	3 <input type="checkbox"/> all relevant points	3 <input type="checkbox"/> many	3 <input type="checkbox"/> to most topics	3 <input type="checkbox"/> reasonable	3 <input type="checkbox"/> good	3 <input type="checkbox"/> many	3 <input type="checkbox"/> many correct	3 <input type="checkbox"/> quite efficient	3 <input type="checkbox"/> reasonable	
4 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/> all & efficiently	4 <input type="checkbox"/> practically all points	4 <input type="checkbox"/> practically all	4 <input type="checkbox"/> + improvement suggestions	4 <input type="checkbox"/> very good	4 <input type="checkbox"/> new crucial point(s)	4 <input type="checkbox"/> almost all	4 <input type="checkbox"/> + improvement suggestions	4 <input type="checkbox"/> very efficient	4 <input type="checkbox"/> very good	

NOTES: Ben  
lack → if yes → go high

REVIEWER Start from 1 and add/subtract

$$1 + 2.0 + 2.1 + 2.2 - 0 = 7.3 \approx 7$$

QUESTIONS ASKED		REVIEW OF REPORT					REVIEW OF OPPOSITION					ANSWERS TO JURY QUESTIONS
0 <input type="checkbox"/>	1 <input type="checkbox"/>	report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	speech summary	discussion analysis	own opinions	pros & cons	prioritisation	
0 <input type="checkbox"/> too few, mostly irrelevant	0 <input type="checkbox"/> some relevant, sufficient number, could clear things out	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> no	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> no	0 <input type="checkbox"/> concise and correct or no questions asked
1 <input type="checkbox"/>	1 <input type="checkbox"/>	1 <input type="checkbox"/> partial	1 <input type="checkbox"/> too short/long	1 <input type="checkbox"/> some	1 <input type="checkbox"/> partially relevant	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> too short/long	1 <input type="checkbox"/> too short/long	1 <input type="checkbox"/> some	1 <input type="checkbox"/> partially relevant	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> some incorrect, inconclusive or too long
2 <input type="checkbox"/>	2 <input type="checkbox"/>	2 <input type="checkbox"/> good	2 <input type="checkbox"/> relevant parts	2 <input type="checkbox"/> many	2 <input type="checkbox"/> mostly adequate	2 <input type="checkbox"/> some	2 <input type="checkbox"/> informative, apt	2 <input type="checkbox"/> relevant parts	2 <input type="checkbox"/> many	2 <input type="checkbox"/> mostly adequate	2 <input type="checkbox"/> some	2 <input type="checkbox"/> deeply incorrect or show deep misconceptions
3 <input type="checkbox"/>	3 <input type="checkbox"/>	3 <input type="checkbox"/> detailed, complex	3 <input type="checkbox"/> accurate, conclusive	3 <input type="checkbox"/> + improvement suggestions	3 <input type="checkbox"/> fully adequate	3 <input type="checkbox"/> good	3 <input type="checkbox"/> brief but accurate	3 <input type="checkbox"/> accurate, conclusive	3 <input type="checkbox"/> + improvement suggestions	3 <input type="checkbox"/> fully adequate	3 <input type="checkbox"/> good	

NOTES: Raymond

# SCORESHEET

REPORTER Start from 1 and add/subtract

1 +  $\boxed{2}$  +  $\boxed{1}$  -  $\boxed{-1}$  =  $\boxed{3}$

stage: fight (round no.): 3  
 reporter: Czech Republic opponent: UK

room: D  
 reviewer: Germany

Metronome Synchronization  
 problem no.: 16

Juror's name: Ng Hui Pheon  
 signature: *Ng Hui Pheon*

REPORT 2.4						DISCUSSION WITH OPPONENT			ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfilment	scientific contribution	relevant arguments/responses	efficiency	
0 almost no	almost no	too few	no/ almost no	others' data, incorrectly cited	misunderstood	0 almost no	too few	almost no, chaotic	
1 some	some	some	some	review of sources, cited	partly	1 only technical	some	avoided some	
2 fair	fair	fair	not well fitting	some own input	average	2 some scientific	many	questions	
3 good	good	well performed, sufficient number	qualitatively analysed	some interesting results	interesting solution	3 interesting points	+ data/theory	cooperated well	
4 detailed demonstrative	quite detailed, ? correct	+ results explained errors analysed	+ theory limits explained, conclusive	considerable experimental or theoretical	some aspects above average	4 discussed	convincingly supported	answered directly to most questions	
6 deep and comprehensible, shows physical insight	detailed, complex, completely testable	+ reproducible, convincing analysis	well fitting, deviations analysed, conclusive	considerable experimental and theoretical	greater extent than expected	4 brought in new physics	proved deep understanding	efficient, productive	

NOTES: poor qualitative explanation of phenomenon - reporter doesn't seem to understand. physical intuition behind equations not given.

no explanation of deviation between theory + expt given.

limited conditions explored - eg. initial phase diff. always tiny.

OPPONENT Start from 1 and add/subtract

1 +  $\boxed{2.5}$  +  $\boxed{1.5}$  -  $\boxed{0}$  =  $\boxed{5}$

QUESTIONS ASKED		OPPOSITION (SPEECH) 2.5					DISCUSSION WITH REPORTER 1.5					ANSWERS TO JURY and REVIEWER'S QUESTIONS	
		time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation		
0	almost no, irrelevant	0	almost no	almost nothing	no or irrelevant	almost no	0	almost no	irrelevant	very little	almost no	0	concise and correct or no questions asked
1	some relevant, aimed at resolving some unclear points	1	very little	some main points	few	some	1	little	some	some	to some extent	1	some incorrect, inconclusive or too long
2	short allowing short answers, prioritized, all time used	2	not all	main points	some	to important topics	2	partial	average	some correct	leading or cooperative	2	deeply incorrect or show deep misconceptions
		3	almost all	all relevant points	many	to most topics	3	good	many	many correct	quite efficient	3	
		4	all & efficiently	practically all points	practically all	+ improvement suggestions	4	new crucial point(s)	almost all	+ improvement suggestions	very efficient	4	

little insights from the subsequent discussion

REVIEWER Start from 1 and add/subtract

1 +  $\boxed{3}$  +  $\boxed{3}$  +  $\boxed{2.5}$  -  $\boxed{0}$  =  $\boxed{9.5}$  →  $\boxed{9}$

QUESTIONS ASKED 3		REVIEW OF REPORT 3					REVIEW OF OPPOSITION 2.5					ANSWERS TO JURY QUESTIONS	
		report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	speech summary	discussion analysis	own opinions	pros & cons	prioritisation		
0	too few, mostly irrelevant	0	poor	almost no	too few	irrelevant	0	poor	almost no	too few	irrelevant	0	concise and correct or no questions asked
1	some relevant, sufficient number, could clear things out	1	partial	too short/long	some	partially relevant	1	too short/long	too short/long	some	partially relevant	1	some incorrect, inconclusive or too long
2	most time used, many unclear points resolved, aimed at both rep. and opp.	2	good	relevant parts	many	mostly adequate	2	informative, apt	relevant parts	many	mostly adequate	2	deeply incorrect or show deep misconceptions
3	+short, apt and clear, well prioritized time managed efficiently	3	detailed, complex	accurate, conclusive	+ improvement suggestions	fully adequate	3	brief but accurate	accurate, conclusive	+ improvement suggestions	fully adequate	3	

NOTES:



# SCORESHEET

REPORTER Start from 1 and add/subtract  
 1 + 3.5 + 1.5 - 1 = 5

stage: 4 fight (round no.): 111  
 reporter: CZE opponent: UK

room: D reviewer: GER

problem no.: 4/16 Juror's name: PLESCH  
 signature: [Signature]

REPORT						DISCUSSION WITH OPPONENT			ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfilment	scientific contribution	relevant arguments/responses	efficiency	
0 almost no	almost no	too few	no/ almost no	others' data, incorrectly cited	misunderstood	0 almost no	too few	almost no, chaotic	
1 some	some	some	some	review of sources, cited	partly	1 only technical	some	avoided some questions	
2 fair	fair	fair	not well fitting	some own input	average	2 some scientific points cleared	many	cooperated well	
3 good	good	well performed, sufficient number	qualitatively analysed	some interesting results	interesting solution	3 interesting points discussed	+ data/theory convincingly supported	answered directly to most questions	
4 detailed demonstrative	quite detailed, correct	+ results explained errors analysed	+ theory limits explained, conclusive	considerable experimental or theoretical	some aspects above average	4 brought in new physics	proved deep understanding	efficient, productive	
6 deep and comprehensible, shows physical insight	detailed, complex, completely testable	+ reproducible, convincing analysis	well fitting, deviations analysed, conclusive	considerable experimental and theoretical	greater extent than expected				

NOTES: *cf. h2 reference*

OPPONENT Start from 1 and add/subtract  
 1 + 1 + 1.5 + 1.5 - 0 = 5

QUESTIONS ASKED		OPPOSITION (SPEECH)					DISCUSSION WITH REPORTER					ANSWERS TO JURY and REVIEWER'S QUESTIONS
0 almost no, irrelevant	1 some relevant, aimed at resolving some unclear points	time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation	
0 almost no, irrelevant	1 some relevant, aimed at resolving some unclear points	0 almost no	almost nothing	no or irrelevant	almost no	no	0 almost no	irrelevant	very little	almost no	no	
1 some relevant, aimed at resolving some unclear points	2 short allowing short answers, prioritized, all time used	1 very little	some main points	few	some	almost no	1 little	some	some	to some extent	almost no	
2 short allowing short answers, prioritized, all time used		2 not all	main points	some	to important topics	some	2 partial	average	some correct	leading or cooperative	some	
		3 almost all	all relevant points	many	to most topics	reasonable	3 good	many	many correct	quite efficient	reasonable	
		4 all & efficiently	practically all points	practically all	+ improvement suggestions	very good	4 new crucial point(s)	almost all	+ improvement suggestions	very efficient	very good	

NOTES:

REVIEWER Start from 1 and add/subtract  
 1 + 1 + 2 + 2 - 0 = 6

QUESTIONS ASKED		REVIEW OF REPORT					REVIEW OF OPPOSITION					ANSWERS TO JURY QUESTIONS
0 too few, mostly irrelevant	1 some relevant, sufficient number, could clear things out	report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	speech summary	discussion analysis	own opinions	pros & cons	prioritisation	
0 too few, mostly irrelevant	1 some relevant, sufficient number, could clear things out	0 poor	almost no	too few	irrelevant	no	0 poor	almost no	too few	irrelevant	no	
1 some relevant, sufficient number, could clear things out	2 most time used, many unclear points resolved, aimed at both rep. and opp.	1 partial	too short/long	some	partially relevant	almost no	1 too short/long	too short/long	some	partially relevant	almost no	
2 most time used, many unclear points resolved, aimed at both rep. and opp.	3 +short, apt and clear, well prioritized time managed efficiently	2 good	relevant parts	many	mostly adequate	some	2 informative, apt	relevant parts	many	mostly adequate	some	
3 +short, apt and clear, well prioritized time managed efficiently		3 detailed, complex	accurate, conclusive	+ improvement suggestions	fully adequate	good	3 brief but accurate	accurate, conclusive	+ improvement suggestions	fully adequate	good	

NOTES: *Bitatic, Random  
 Trage okay*

*Compound pendulum (A) -> non sense  
 focused on what was not done*

*df system  
 Own graph*

# SCORESHEET

## REPORTER

Start from 1 and add/subtract

$$1 + \boxed{2} + \boxed{2} - \boxed{0.5} = \boxed{5}$$

stage: 2

fight (round no.): 3

room: D

problem no.: 16

reporter: Czech

opponent: ~~UK~~ UK

reviewer: Germany

Juror's name: *Ojan Khadivi-Damavandi*  
signature: *Ojan Khadivi-Damavandi*

REPORT						DISCUSSION WITH OPPONENT			ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfilment	scientific contribution	relevant arguments/responses	efficiency	
0 --- almost no	almost no	too few	no/ almost no	others' data, incorrectly cited	misunderstood	0 --- almost no	too few	almost no, chaotic	
1 --- some	some	some	some	review of sources, cited	partly	1 --- only technical points cleared	some	avoided some questions	
2 --- fair	fair	fair	not well fitting	some own input	average	2 --- some scientific points cleared	many	cooperated well	
3 --- good	good	well performed, sufficient number	deviations qualitatively analysed	some interesting results	interesting solution	3 --- interesting points discussed	+ data/theory convincingly supported	answered directly to most questions	
4 --- detailed demonstrative	quite detailed, correct	+ results explained errors analysed	+ theory limits explained, conclusive	considerable experimental or theoretical	some aspects above average	4 --- brought in new physics	proved deep understanding	efficient, productive	
6 --- deep and comprehensible, shows physical insight	detailed, complex, completely testable	+ reproducible, convincing analysis	well fitting, deviations analysed, conclusive	considerable experimental and theoretical	greater extent than expected				

NOTES:

## OPPONENT

Start from 1 and add/subtract

$$1 + \boxed{1} + \boxed{2} + \boxed{2.5} - \boxed{0} = \boxed{6}$$

QUESTIONS ASKED		OPPOSITION (SPEECH)					DISCUSSION WITH REPORTER					ANSWERS TO JURY and REVIEWER'S QUESTIONS
		time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation	
0 --- almost no, irrelevant		0 --- almost no	almost nothing	no or irrelevant	almost no	no	0 --- almost no	irrelevant	very little	almost no	no	0 --- concise and correct or no questions asked
1 --- some relevant, aimed at resolving some unclear points		1 --- very little	some main points	few	some	almost no	1 --- little	some	some	to some extent	almost no	1 --- some incorrect, inconclusive or too long
2 --- short allowing short answers, prioritized, all time used		2 --- not all	main points	some	to important topics	some	2 --- partial	average	some correct	leading or cooperative	some	2 --- deeply incorrect or show deep misconceptions
		3 --- almost all	all relevant points	many	to most topics	reasonable	3 --- good	many	many correct	quite efficient	reasonable	
		4 --- all & efficiently	practically all points	practically all	+ improvement suggestions	very good	4 --- new crucial point(s)	almost all	+ improvement suggestions	very efficient	very good	

NOTES:

## REVIEWER

Start from 1 and add/subtract

$$1 + \boxed{3} + \boxed{1.5} + \boxed{1.5} - \boxed{0} = \boxed{7}$$

QUESTIONS ASKED		REVIEW OF REPORT					REVIEW OF OPPOSITION					ANSWERS TO JURY QUESTIONS
		report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	speech summary	discussion analysis	own opinions	pros & cons	prioritisation	
0 --- too few, mostly irrelevant		0 --- poor	almost no	too few	irrelevant	no	0 --- poor	almost no	too few	irrelevant	no	0 --- concise and correct or no questions asked
1 --- some relevant, sufficient number, could clear things out		1 --- partial	too short/long	some	partially relevant	almost no	1 --- too short/long	too short/long	some	partially relevant	almost no	1 --- some incorrect, inconclusive or too long
2 --- most time used, many unclear points resolved, aimed at both rep. and opp.		2 --- good	relevant parts	many	mostly adequate	some	2 --- informative, apt	relevant parts	many	mostly adequate	some	2 --- deeply incorrect or show deep misconceptions
3 --- +short, apt and clear, well prioritized time managed efficiently		3 --- detailed, complex	accurate, conclusive	+ improvement suggestions	fully adequate	good	3 --- brief but accurate	accurate, conclusive	+ improvement suggestions	fully adequate	good	

NOTES: own solution instead of opinion. 0.5 for 1 question

# SCORESHEET

## REPORTER

Start from 1 and add/subtract

$$1 + \boxed{1} + \boxed{1.5} - \boxed{2} = \boxed{4}$$

stage: 3

fight (round no.): 3

room: D

problem no.: 10

reporter: UK

opponent: Germany

reviewer: Czech Republic

Juror's name: *Ajita Khatri-Amarnath*  
signature: *Ajita Khatri*

REPORT						DISCUSSION WITH OPPONENT			ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfilment	scientific contribution	relevant arguments/responses	efficiency	
0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> no/almost no	0 <input type="checkbox"/> others' data, incorrectly cited	0 <input type="checkbox"/> misunderstood	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> almost no, chaotic	
1 <input type="checkbox"/> some	1 <input checked="" type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> review of sources, cited	1 <input type="checkbox"/> partly	1 <input type="checkbox"/> only technical	1 <input checked="" type="checkbox"/> some	1 <input type="checkbox"/> avoided some questions	
2 <input type="checkbox"/> fair	2 <input type="checkbox"/> fair	2 <input type="checkbox"/> fair	2 <input type="checkbox"/> not well fitting	2 <input type="checkbox"/> some own input	2 <input type="checkbox"/> average	2 <input type="checkbox"/> some scientific	2 <input type="checkbox"/> many	2 <input checked="" type="checkbox"/> cooperated well	
3 <input type="checkbox"/> good	3 <input type="checkbox"/> good	3 <input type="checkbox"/> well performed, sufficient number	3 <input type="checkbox"/> deviations	3 <input type="checkbox"/> some interesting results	3 <input type="checkbox"/> interesting solution	3 <input type="checkbox"/> interesting points	3 <input type="checkbox"/> + data/theory	3 <input type="checkbox"/> answered directly	
4 <input type="checkbox"/> detailed demonstrative	4 <input type="checkbox"/> quite detailed, correct	4 <input type="checkbox"/> + results explained, errors analysed	4 <input type="checkbox"/> qualitatively analysed	4 <input type="checkbox"/> considerable experimental or theoretical	4 <input type="checkbox"/> some aspects above average	4 <input type="checkbox"/> discussed	4 <input type="checkbox"/> convincingly supported	4 <input type="checkbox"/> to most questions	
5 <input type="checkbox"/> deep and comprehensible, shows physical insight	5 <input type="checkbox"/> detailed, complex, completely testable	5 <input type="checkbox"/> + reproducible, convincing analysis	5 <input type="checkbox"/> well fitting, deviations analysed, conclusive	5 <input type="checkbox"/> considerable experimental and theoretical	5 <input type="checkbox"/> greater extent than expected	5 <input type="checkbox"/> brought in new physics	5 <input type="checkbox"/> proved deep understanding	5 <input type="checkbox"/> efficient, productive	

NOTES:

## OPPONENT

Start from 1 and add/subtract

$$1 + \boxed{1.5} + \boxed{3} + \boxed{2.5} - \boxed{0} = \boxed{8}$$

QUESTIONS ASKED		OPPOSITION (SPEECH)					DISCUSSION WITH REPORTER					ANSWERS TO JURY and REVIEWER'S QUESTIONS
time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation			
0 <input type="checkbox"/> almost no, irrelevant	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no or irrelevant	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> very little	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no			
1 <input type="checkbox"/> some relevant, aimed at resolving some unclear points	1 <input type="checkbox"/> very little	1 <input type="checkbox"/> few	1 <input type="checkbox"/> some	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> little	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> to some extent	1 <input type="checkbox"/> almost no			
2 <input checked="" type="checkbox"/> short allowing short answers, prioritized, all time used	2 <input type="checkbox"/> not all	2 <input type="checkbox"/> some	2 <input type="checkbox"/> to important topics	2 <input type="checkbox"/> some	2 <input type="checkbox"/> partial	2 <input type="checkbox"/> average	2 <input checked="" type="checkbox"/> some correct	2 <input type="checkbox"/> leading or cooperative	2 <input type="checkbox"/> some			
	3 <input type="checkbox"/> almost all	3 <input type="checkbox"/> many	3 <input type="checkbox"/> to most topics	3 <input type="checkbox"/> reasonable	3 <input type="checkbox"/> good	3 <input checked="" type="checkbox"/> many	3 <input type="checkbox"/> many correct	3 <input checked="" type="checkbox"/> quite efficient	3 <input type="checkbox"/> reasonable			
	4 <input type="checkbox"/> all & efficiently	4 <input type="checkbox"/> practically all points	4 <input type="checkbox"/> + improvement suggestions	4 <input type="checkbox"/> very good	4 <input checked="" type="checkbox"/> new crucial point(s)	4 <input type="checkbox"/> almost all	4 <input type="checkbox"/> + improvement suggestions	4 <input type="checkbox"/> very efficient	4 <input type="checkbox"/> very good			

NOTES:

## REVIEWER

Start from 1 and add/subtract

$$1 + \boxed{1} + \boxed{1.5} + \boxed{1.5} - \boxed{0} = \boxed{5}$$

QUESTIONS ASKED		REVIEW OF REPORT					REVIEW OF OPPOSITION					ANSWERS TO JURY QUESTIONS
report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	speech summary	discussion analysis	own opinions	pros & cons	prioritisation			
0 <input type="checkbox"/> too few, mostly irrelevant	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> no	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> no			
1 <input checked="" type="checkbox"/> clear things out	1 <input checked="" type="checkbox"/> partial	1 <input checked="" type="checkbox"/> some	1 <input type="checkbox"/> partially relevant	1 <input checked="" type="checkbox"/> almost no	1 <input checked="" type="checkbox"/> too short/long	1 <input type="checkbox"/> too short/long	1 <input checked="" type="checkbox"/> some	1 <input checked="" type="checkbox"/> partially relevant	1 <input checked="" type="checkbox"/> almost no			
2 <input type="checkbox"/> most time used, many unclear points resolved, aimed at both rep. and opp.	2 <input type="checkbox"/> good	2 <input type="checkbox"/> many	2 <input type="checkbox"/> mostly adequate	2 <input type="checkbox"/> some	2 <input type="checkbox"/> informative, apt	2 <input type="checkbox"/> relevant parts	2 <input type="checkbox"/> many	2 <input type="checkbox"/> mostly adequate	2 <input type="checkbox"/> some			
3 <input type="checkbox"/> +short, apt and clear, well prioritized time managed efficiently	3 <input type="checkbox"/> detailed, complex	3 <input type="checkbox"/> + improvement suggestions	3 <input type="checkbox"/> fully adequate	3 <input type="checkbox"/> good	3 <input type="checkbox"/> brief but accurate	3 <input type="checkbox"/> accurate, conclusive	3 <input type="checkbox"/> + improvement suggestions	3 <input type="checkbox"/> fully adequate	3 <input type="checkbox"/> good			

NOTES:

# SCORESHEET

REPORTER Start from 1 and add/subtract  
 1 + 1 + 1 -    = 3

stage: 11  
 reporter: BR

fight (round no.): 111  
 opponent: GER

room: P  
 reviewer: CZE

problem no.: 10

Juror's name: PLESCU  
 signature: [Signature]

REPORT						DISCUSSION WITH OPPONENT			ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfilment	scientific contribution	relevant arguments/responses	efficiency	
0 <u>  </u> almost no	almost no	too few	no/ almost no	others' data, incorrectly cited	misunderstood	0 <u>  </u> almost no	too few	almost no, chaotic	
1 <u>  </u> some	<u>some</u>	<u>some</u>	<u>some</u>	review of sources, cited	<u>partly</u>	1 <u>  </u> only technical points cleared	<u>some</u>	avoided some questions	
2 <u>  </u> fair	fair	fair	not well fitting	some own input	average	2 <u>  </u> some scientific points cleared	many	cooperated well	
3 <u>  </u> good	good	well performed, sufficient number	deviations	some interesting results	interesting solution	3 <u>  </u> interesting points discussed	+ data/theory convincingly supported	answered directly to most questions	
4 <u>  </u> detailed demonstrative	quite detailed, correct	+ results explained errors analysed	qualitatively analysed	considerable experimental or theoretical	some aspects above average	4 <u>  </u> brought in new physics	proved deep understanding	efficient, productive	
5 <u>  </u> deep and comprehensible, shows physical insight	detailed, complex, completely testable	+ reproducible, convincing analysis	well fitting, deviations analysed, conclusive	considerable experimental and theoretical	greater extent than expected				

NOTES: μ relevant only for thin layers

OPPONENT Start from 1 and add/subtract  
 1 + 1.5 + 3.5 + 2.5 - 0.5 = 8

QUESTIONS ASKED	OPPOSITION (SPEECH)					DISCUSSION WITH REPORTER					ANSWERS TO JURY and REVIEWER'S QUESTIONS
	time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation	
0 <u>  </u> almost no, irrelevant	almost no	almost nothing	no or irrelevant	almost no	no	0 <u>  </u> almost no	irrelevant	very little	almost no	no	
1 <u>  </u> some relevant, aimed at resolving some unclear points	1 <u>  </u> very little	some main points	few	some	almost no	1 <u>  </u> little	some	some	to some extent	almost no	
2 <u>  </u> short allowing short answers, prioritized, all time used	2 <u>  </u> not all	main points	some	to important topics	some	2 <u>  </u> partial	average	some correct	leading or cooperative	some	
	3 <u>  </u> almost all	all relevant points	many	to most topics	reasonable	3 <u>  </u> good	many	many correct	quite efficient	reasonable	
	4 <u>  </u> <u>all</u> efficiently	practically all points	practically all	+ improvement suggestions	very good	4 <u>  </u> new crucial point(s)	almost all	+ improvement suggestions	very efficient	very good	

NOTES: grau R>>h → newsi problem visu

REVIEWER Start from 1 and add/subtract  
 1 + 1 + 2 + 2 -    = 6

QUESTIONS ASKED	REVIEW OF REPORT					REVIEW OF OPPOSITION					ANSWERS TO JURY QUESTIONS
	report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	speech summary	discussion analysis	own opinions	pros & cons	prioritisation	
0 <u>  </u> too few, mostly irrelevant	poor	almost no	too few	irrelevant	no	0 <u>  </u> poor	almost no	too few	irrelevant	no	
1 <u>  </u> some relevant, sufficient number, could clear things out	partial	too short/long	some	partially relevant	almost no	1 <u>  </u> too short/long	too short/long	some	partially relevant	almost no	
2 <u>  </u> most time used, many unclear points resolved, aimed at both rep. and opp.	2 <u>  </u> good	relevant parts	many	mostly adequate	some	2 <u>  </u> informative, apt	relevant parts	many	mostly adequate	some	
3 <u>  </u> +short, apt and clear, well prioritized time managed efficiently	3 <u>  </u> detailed/complex	accurate, conclusive	+ improvement suggestions	fully adequate	good	3 <u>  </u> brief but accurate	accurate, conclusive	+ improvement suggestions	fully adequate	good	

NOTES:

# SCORESHEET

REPORTER

Start from 1 and add/subtract

1 + 0.8 + 1 - 0.5 = 2

stage: 3

fight (round no.): 3

room: D

problem no.: 10

Juror's name: Wee Wee Hsu

reporter: U.K.

opponent: Germany

reviewer: Czech R.

signature: *[Signature]*

## REPORT

	phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfillment
0	almost no	almost no	too few	no/almost no	others' data, incorrectly cited	misunderstood
1	<del>some</del>	<del>some</del>	<del>some</del>	<del>some</del>	review of sources, cited	<del>partly</del>
2	fair	fair	fair	not well fitting	some own input	average
3	good	good	well performed, sufficient number	deviations qualitatively analysed	some interesting results	interesting solution
4	detailed	quite detailed, correct	+ results explained	+ theory limits explained, conclusive	considerable experimental or theoretical	some aspects above average
5	demonstrative	detailed, complex, completely testable	+ reproducible, convincing analysis	well fitting, deviations analysed, conclusive	considerable experimental and theoretical	greater extent than expected
6	deep and comprehensive, shows physical insight					

## DISCUSSION WITH OPPONENT

	scientific contribution	relevant arguments/responses	efficiency
0	almost no	too few	almost no, chaotic
1	only technical points cleared	<del>some</del>	<del>avoided some</del> questions
2	some scientific points cleared	many	cooperated well
3	interesting points discussed	+ data/theory convincingly supported	answered directly to most questions
4	brought in new physics	proved deep understanding	efficient, productive

## ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS

- 0  concise and correct or no questions asked
- 1  some incorrect, inconclusive or too long
- 2  deeply incorrect or show deep misconceptions

## NOTES:

distance over area. surface tension. contact angle. circumference? surface area of PA. No explanation of the phenomenon. It adds nothing to separate. No theoretical prediction of the phenomenon. Tackling Fvs d? No theoretical model. Many understanding. No theoretical model. Neglected hydrodynamic when an definition is rate of separation.

## OPPONENT

Start from 1 and add/subtract

1 + 1.5 + 2.5 + 3 - 0 = 8

## QUESTIONS ASKED

- 0  almost no, irrelevant
- 1  some relevant, aimed at resolving some unclear points
- 2  short allowing short answers, prioritized, all time used

## OPPOSITION (SPEECH)

	time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation
0	almost no	almost nothing	no or irrelevant	almost no	no
1	very little	some main points	few	some	almost no
2	not all	main points	some	to important topics	<del>some</del>
3	almost all	all relevant points	many	to most topics	reasonable
4	all & efficiently	practically all points	practically all	+ improvement suggestions	very good

## DISCUSSION WITH REPORTER

	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation
0	almost no	irrelevant	very little	almost no	no
1	little	some	some	to some extent	almost no
2	partial	average	some correct	leading or cooperative	some
3	good	many	many correct	quite efficient	reasonable
4	new crucial point(s)	almost all	+ improvement suggestions	very efficient	very good

## ANSWERS TO JURY and REVIEWER'S QUESTIONS

- 0  concise and correct or no questions asked
- 1  some incorrect, inconclusive or too long
- 2  deeply incorrect or show deep misconceptions

## NOTES:

capillary bridge. a circular form. asymmetry of contact angle. why "2.5" for immediate separation? Direction of separation. viscous effect? Restrictive velocity layer? Is that necessary?  $\Delta P = \gamma \left( \frac{1}{r_1} + \frac{1}{r_2} \right)$  the 2 radii of curvature.

## REVIEWER

Start from 1 and add/subtract

1 + 1.5 + 2.5 + 0.8 - 0.5 = 5

## QUESTIONS ASKED

- 0  too few, mostly irrelevant
- 1  some relevant, sufficient number, could clear things out
- 2  most time used, many unclear points resolved, aimed at both rep. and opp.
- 3  +short, apt and clear, well prioritized time managed efficiently

## REVIEW OF REPORT

	report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation
0	poor	almost no	too few	irrelevant	no
1	partial	too short/long	some	partially relevant	almost no
2	good	relevant parts	many	mostly adequate	some
3	detailed, complex	accurate, conclusive	+ improvement suggestions	fully adequate	good

## REVIEW OF OPPOSITION

	speech summary	discussion analysis	own opinions	pros & cons	prioritisation
0	poor	almost no	too few	irrelevant	no
1	too short/long	too short/long	some	partially relevant	almost no
2	informative, apt	relevant parts	many	mostly adequate	some
3	brief but accurate	accurate, conclusive	+ improvement suggestions	fully adequate	good

## ANSWERS TO JURY QUESTIONS

- 0  concise and correct or no questions asked
- 1  some incorrect, inconclusive or too long
- 2  deeply incorrect or show deep misconceptions

## NOTES:

Hydrostatics. not hydrodynamics. mass is excluded. unclear on why hydrodynamics ought to be considered. not sufficient a review of the opponent.

# SCORESHEET

REPORTER <sup>1.1</sup> Start from 1 and add/subtract  
 1 + 1.4 + ~~0.8~~ - 0 = 3.5 ≈ 4

stage: 3 fight (round no.): 3  
 reporter: U.K opponent: Germany

room: D problem no.: 10  
 reviewer: Check

Juror's name: Mhrit  
 signature: [Signature]

REPORT						DISCUSSION WITH OPPONENT			ANSWERS TO JURY, OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfilment	scientific contribution	relevant arguments/responses	efficiency	
0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> no/almost no	0 <input type="checkbox"/> others' data, incorrectly cited	0 <input type="checkbox"/> misunderstood	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> almost no, chaotic	
1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> review of sources, cited	1 <input type="checkbox"/> partly	1 <input type="checkbox"/> only technical	1 <input type="checkbox"/> some	1 <input type="checkbox"/> avoided some	
2 <input type="checkbox"/> fair	2 <input type="checkbox"/> fair	2 <input type="checkbox"/> fair	2 <input type="checkbox"/> not well fitting	2 <input type="checkbox"/> some own input	2 <input type="checkbox"/> average	2 <input type="checkbox"/> some scientific	2 <input type="checkbox"/> many	2 <input type="checkbox"/> questions	
3 <input type="checkbox"/> good	3 <input type="checkbox"/> good	3 <input type="checkbox"/> well performed, sufficient number	3 <input type="checkbox"/> deviations qualitatively analysed	3 <input type="checkbox"/> some interesting results	3 <input type="checkbox"/> interesting solution	3 <input type="checkbox"/> points cleared		3 <input type="checkbox"/> cooperated well	
4 <input type="checkbox"/> detailed demonstrative	4 <input type="checkbox"/> quite detailed, correct	4 <input type="checkbox"/> + results explained errors analysed	4 <input type="checkbox"/> + theory limits explained, conclusive	4 <input type="checkbox"/> considerable experimental or theoretical	4 <input type="checkbox"/> some aspects above average	4 <input type="checkbox"/> interesting points discussed	4 <input type="checkbox"/> + data/theory convincingly supported	4 <input type="checkbox"/> answered directly to most questions	
5 <input type="checkbox"/> deep and comprehensible, shows physical insight	5 <input type="checkbox"/> detailed, complex, completely testable	5 <input type="checkbox"/> + reproducible, convincing analysis	5 <input type="checkbox"/> well fitting, deviations analysed, conclusive	5 <input type="checkbox"/> considerable experimental and theoretical	5 <input type="checkbox"/> greater extent than expected	5 <input type="checkbox"/> brought in new physics	5 <input type="checkbox"/> proved deep understanding	5 <input type="checkbox"/> efficient, productive	

NOTES: Phillip

OPPONENT <sup>Start from 1 and add/subtract</sup>  
 1 + 1.2 + 2.6 + 2.6 - 0 = 7.4 ≈ 7

QUESTIONS ASKED		OPPOSITION (SPEECH)					DISCUSSION WITH REPORTER					ANSWERS TO JURY and REVIEWER'S QUESTIONS
0	1	time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation	
0 <input type="checkbox"/> almost no, irrelevant	0 <input type="checkbox"/> some relevant, aimed at resolving	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> almost nothing	0 <input type="checkbox"/> no or irrelevant	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> very little	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no	
1 <input type="checkbox"/> some unclear points	1 <input type="checkbox"/> short allowing short answers, prioritized, all time used	1 <input type="checkbox"/> very little	1 <input type="checkbox"/> some main points	1 <input type="checkbox"/> few	1 <input type="checkbox"/> some	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> little	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> to some extent	1 <input type="checkbox"/> almost no	
2 <input type="checkbox"/> not all	2 <input type="checkbox"/> all & efficiently	2 <input type="checkbox"/> not all	2 <input type="checkbox"/> main points	2 <input type="checkbox"/> some	2 <input type="checkbox"/> to important topics	2 <input type="checkbox"/> some	2 <input type="checkbox"/> partial	2 <input type="checkbox"/> average	2 <input type="checkbox"/> some correct	2 <input type="checkbox"/> leading or cooperative	2 <input type="checkbox"/> some	
3 <input type="checkbox"/> almost all	3 <input type="checkbox"/> all & efficiently	3 <input type="checkbox"/> almost all	3 <input type="checkbox"/> all relevant points	3 <input type="checkbox"/> many	3 <input type="checkbox"/> to most topics	3 <input type="checkbox"/> reasonable	3 <input type="checkbox"/> good	3 <input type="checkbox"/> many	3 <input type="checkbox"/> many correct	3 <input type="checkbox"/> quite efficient	3 <input type="checkbox"/> reasonable	
4 <input type="checkbox"/> all & efficiently	4 <input type="checkbox"/> all & efficiently	4 <input type="checkbox"/> all & efficiently	4 <input type="checkbox"/> practically all points	4 <input type="checkbox"/> practically all	4 <input type="checkbox"/> + improvement suggestions	4 <input type="checkbox"/> very good	4 <input type="checkbox"/> new crucial point(s)	4 <input type="checkbox"/> almost all	4 <input type="checkbox"/> + improvement suggestions	4 <input type="checkbox"/> very efficient	4 <input type="checkbox"/> very good	

NOTES: Auguste

REVIEWER <sup>Start from 1 and add/subtract</sup>  
 1 + 1.0 + 1.6 + 1.7 - 0 = 5.3 ≈ 5

QUESTIONS ASKED		REVIEW OF REPORT					REVIEW OF OPPOSITION					ANSWERS TO JURY QUESTIONS
0	1	report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	speech summary	discussion analysis	own opinions	pros & cons	prioritisation	
0 <input type="checkbox"/> too few, mostly irrelevant	0 <input type="checkbox"/> some relevant, sufficient number, could clear things out	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> no	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> no	
1 <input type="checkbox"/> most time used, many unclear points resolved, aimed at both rep. and opp.	1 <input type="checkbox"/> +short, apt and clear, well prioritized time managed efficiently	1 <input type="checkbox"/> partial	1 <input type="checkbox"/> too short/long	1 <input type="checkbox"/> some	1 <input type="checkbox"/> partially relevant	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> too short/long	1 <input type="checkbox"/> too short/long	1 <input type="checkbox"/> some	1 <input type="checkbox"/> partially relevant	1 <input type="checkbox"/> almost no	
2 <input type="checkbox"/> good	2 <input type="checkbox"/> detailed, complex	2 <input type="checkbox"/> good	2 <input type="checkbox"/> relevant parts	2 <input type="checkbox"/> many	2 <input type="checkbox"/> mostly adequate	2 <input type="checkbox"/> some	2 <input type="checkbox"/> informative, apt	2 <input type="checkbox"/> relevant parts	2 <input type="checkbox"/> many	2 <input type="checkbox"/> mostly adequate	2 <input type="checkbox"/> some	
3 <input type="checkbox"/> +short, apt and clear, well prioritized time managed efficiently	3 <input type="checkbox"/> detailed, complex	3 <input type="checkbox"/> detailed, complex	3 <input type="checkbox"/> accurate, conclusive	3 <input type="checkbox"/> + improvement suggestions	3 <input type="checkbox"/> fully adequate	3 <input type="checkbox"/> good	3 <input type="checkbox"/> brief but accurate	3 <input type="checkbox"/> accurate, conclusive	3 <input type="checkbox"/> + improvement suggestions	3 <input type="checkbox"/> fully adequate	3 <input type="checkbox"/> good	

NOTES: Jakub

# SCORESHEET

REPORTER Start from 1 and add/subtract

$$1 + \boxed{3} + \boxed{1.5} - \boxed{0.5} = \boxed{5}$$

stage:  
reporter: UK

fight (round no.): 3  
opponent: Germany

room: D  
reviewer: Czech

Pulling Glasses Apart  
problem no.: 10

Juror's name: Ng Hui Choon  
signature: *Ng Hui Choon*

REPORT <del>3</del> 3						DISCUSSION WITH OPPONENT 1.5			ANSWERS TO JURY, -0.5 OPPONENT and REVIEWER'S QUESTIONS
phenomenon explanation	theory/model	relevant experiments	comparison between theory and experiment	own contribution	task fulfilment	scientific contribution	relevant arguments/responses	efficiency	
0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> no/ almost no	0 <input type="checkbox"/> others' data, incorrectly cited	0 <input type="checkbox"/> misunderstood	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> almost no, chaotic	
1 <input checked="" type="checkbox"/> some	1 <input checked="" type="checkbox"/> some	1 <input checked="" type="checkbox"/> some	1 <input checked="" type="checkbox"/> some	1 <input type="checkbox"/> review of sources, cited	1 <input type="checkbox"/> partly	1 <input type="checkbox"/> only technical	1 <input type="checkbox"/> some	1 <input type="checkbox"/> avoided some	
2 <input type="checkbox"/> fair	2 <input type="checkbox"/> fair	2 <input type="checkbox"/> fair	2 <input type="checkbox"/> not well fitting	2 <input type="checkbox"/> some own input	2 <input checked="" type="checkbox"/> average	2 <input type="checkbox"/> some scientific	2 <input checked="" type="checkbox"/> many	2 <input checked="" type="checkbox"/> questions	
3 <input checked="" type="checkbox"/> good	3 <input checked="" type="checkbox"/> good	3 <input checked="" type="checkbox"/> well performed, sufficient number	3 <input type="checkbox"/> deviations qualitatively analysed	3 <input type="checkbox"/> some interesting results	3 <input type="checkbox"/> interesting solution	3 <input type="checkbox"/> interesting points	3 <input type="checkbox"/> + data/theory	3 <input checked="" type="checkbox"/> cooperated well	
4 <input type="checkbox"/> detailed demonstrative	4 <input type="checkbox"/> quite detailed, correct	4 <input type="checkbox"/> + results explained	4 <input type="checkbox"/> + theory limits explained, conclusive	4 <input type="checkbox"/> considerable experimental or theoretical	4 <input type="checkbox"/> some aspects above average	4 <input type="checkbox"/> discussed	4 <input type="checkbox"/> convincingly supported	4 <input type="checkbox"/> answered directly	
5 <input type="checkbox"/> deep and comprehensible, shows physical insight	5 <input type="checkbox"/> detailed, complex, completely testable	5 <input type="checkbox"/> + reproducible, convincing analysis	5 <input type="checkbox"/> well fitting, deviations analysed, conclusive	5 <input type="checkbox"/> considerable experimental and theoretical	5 <input type="checkbox"/> greater extent than expected	5 <input type="checkbox"/> brought in new physics	5 <input type="checkbox"/> proved deep understanding	5 <input type="checkbox"/> to most questions	
								6 <input type="checkbox"/> efficient, productive	

NOTES:

OPPONENT Start from 1 and add/subtract

$$1 + \boxed{1.5} + \boxed{3.5} + \boxed{3} - \boxed{0} = \boxed{9}$$

QUESTIONS ASKED 1.5		OPPOSITION (SPEECH) 3.5					DISCUSSION WITH REPORTER 3					ANSWERS TO JURY and REVIEWER'S QUESTIONS
almost no, irrelevant	some relevant, aimed at resolving	time used	understanding of presentation	relevant topics addressed	correct own opinions expressed	prioritisation	scientific contribution	relevance of topics	own opinions presented	efficiency	prioritisation	
0 <input type="checkbox"/> almost no, irrelevant	0 <input type="checkbox"/> some relevant, aimed at resolving	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> almost nothing	0 <input type="checkbox"/> no or irrelevant	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> very little	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> no	
1 <input type="checkbox"/> some relevant, aimed at resolving	1 <input type="checkbox"/> some unclear points	1 <input type="checkbox"/> very little	1 <input type="checkbox"/> some main points	1 <input type="checkbox"/> few	1 <input type="checkbox"/> some	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> little	1 <input type="checkbox"/> some	1 <input type="checkbox"/> some	1 <input type="checkbox"/> to some extent	1 <input type="checkbox"/> almost no	
2 <input checked="" type="checkbox"/> short allowing short answers, prioritized, all time used	2 <input type="checkbox"/> short allowing short answers, prioritized, all time used	2 <input type="checkbox"/> not all	2 <input type="checkbox"/> main points	2 <input type="checkbox"/> some	2 <input type="checkbox"/> to important topics	2 <input type="checkbox"/> some	2 <input type="checkbox"/> partial	2 <input type="checkbox"/> average	2 <input type="checkbox"/> some correct	2 <input type="checkbox"/> leading or cooperative	2 <input type="checkbox"/> some	
		3 <input type="checkbox"/> almost all	3 <input type="checkbox"/> all relevant points	3 <input checked="" type="checkbox"/> many	3 <input checked="" type="checkbox"/> to most topics	3 <input checked="" type="checkbox"/> reasonable	3 <input checked="" type="checkbox"/> good	3 <input type="checkbox"/> many	3 <input type="checkbox"/> many correct	3 <input checked="" type="checkbox"/> quite efficient	3 <input checked="" type="checkbox"/> reasonable	
		4 <input checked="" type="checkbox"/> all & efficiently	4 <input type="checkbox"/> practically all points	4 <input type="checkbox"/> practically all	4 <input type="checkbox"/> + improvement suggestions	4 <input type="checkbox"/> very good	4 <input type="checkbox"/> new crucial point(s)	4 <input type="checkbox"/> almost all	4 <input type="checkbox"/> + improvement suggestions	4 <input type="checkbox"/> very efficient	4 <input type="checkbox"/> very good	

NOTES:

REVIEWER Start from 1 and add/subtract

$$1 + \boxed{1} + \boxed{2} + \boxed{2} - \boxed{0} = \boxed{6}$$

QUESTIONS ASKED 1		REVIEW OF REPORT 2					REVIEW OF OPPOSITION 2					ANSWERS TO JURY 0 QUESTIONS
too few, mostly irrelevant	some relevant, sufficient number, could clear things out	report summary & understanding	discussion analysis	own opinions	pros & cons	prioritisation	speech summary	discussion analysis	own opinions	pros & cons	prioritisation	
0 <input type="checkbox"/> too few, mostly irrelevant	0 <input type="checkbox"/> some relevant, sufficient number, could clear things out	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> no	0 <input type="checkbox"/> poor	0 <input type="checkbox"/> almost no	0 <input type="checkbox"/> too few	0 <input type="checkbox"/> irrelevant	0 <input type="checkbox"/> no	
1 <input checked="" type="checkbox"/> clear things out	1 <input type="checkbox"/> most time used, many unclear points resolved, aimed at both rep. and opp.	1 <input checked="" type="checkbox"/> partial	1 <input type="checkbox"/> too short/long	1 <input checked="" type="checkbox"/> some	1 <input type="checkbox"/> partially relevant	1 <input type="checkbox"/> almost no	1 <input type="checkbox"/> top short/long	1 <input type="checkbox"/> too short/long	1 <input type="checkbox"/> some	1 <input type="checkbox"/> partially relevant	1 <input type="checkbox"/> almost no	
2 <input type="checkbox"/> most time used, many unclear points resolved, aimed at both rep. and opp.	2 <input type="checkbox"/> +short, apt and clear, well prioritized time managed efficiently	2 <input type="checkbox"/> good	2 <input type="checkbox"/> relevant parts	2 <input type="checkbox"/> many	2 <input checked="" type="checkbox"/> mostly adequate	2 <input checked="" type="checkbox"/> some	2 <input type="checkbox"/> informative, apt	2 <input type="checkbox"/> relevant parts	2 <input type="checkbox"/> many	2 <input checked="" type="checkbox"/> mostly adequate	2 <input checked="" type="checkbox"/> some	
		3 <input type="checkbox"/> detailed, complex	3 <input type="checkbox"/> accurate, conclusive	3 <input type="checkbox"/> + improvement suggestions	3 <input type="checkbox"/> fully adequate	3 <input type="checkbox"/> good	3 <input type="checkbox"/> brief but accurate	3 <input type="checkbox"/> accurate, conclusive	3 <input type="checkbox"/> + improvement suggestions	3 <input type="checkbox"/> fully adequate	3 <input type="checkbox"/> good	

NOTES:

*didn't discuss theory - experimental organized and controlled discussion.*

Round: ..... 3 ..... Room: ..... D ..... Fight Assistants: ..... Lok Yee Ling, Tan Yi Hao, Pei Jue Lin



Team	Stage 1			Stage 2			Stage 3			Stage 4		
	Germany	Czech	UK	Czech	UK	Germany	UK	Germany	Czech	Rep	Opp	Rev
Juror												
Martin Plesch	4	9	5	5	5	6	3	2	8	6		
Jian Kwatib - Damavandi	5	8	5	5	6	7	4	4	8	5		
Hui Khoo Ng	1	8	1	3	5	9	5	5	9	6		
Navit Tamirat	5	6	1	4	7	7	4	4	7	5		
Wei Hsiung Wee	7	6	7	6	6	8	2	2	8	5		
Acting Team Member												
	Sebastian Friedl	Pavel Stepanek	Ben Miller	Pavel Stepanek	Ben Miller	Raymond Mason	Phillip Clou	Auguste Medert	Jakub Domes			
Rejected Problems		-		4. Magnetic hills 6. Fast chain								
Accepted Problem	17. Vacuum Bazooka			16. Metronome Synchronisation			10. Pulling Glasses Apart					

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