

International Physicists' Tournament Rules

January 24, 2017

The International Physicists' Tournament (IPT) is a competition between teams of university students from different countries. The teams solve challenging scientific problems and defend their solutions in scientific discussions during the Physics Fights (PF).

This document regroups all the play rules of the IPT. It corresponds to the section 2, "Tournament procedures rules" of the official rules. Please take note that this document is to be considered as an helper only. In case of conflicts, the official rules are the only valid document.

1 Play rules

1.1 General provisions

1. Every team consists of up to 6 students and up to 2 team-leaders. Additional participants may join the tournament, but are not allowed to actively participate to the competition.
2. The tournament is composed of selective Physics Fights (PFs), leading to the final PF.

1.2 The jury

1. The jury is nominated and organized by the LOC in cooperation with IOC. The jury consists of at least five members, preferably from different countries.
2. Team leaders, at least one from each team, are included in the jury. Multiple jury members from the same country must be distributed uniformly across the fights. Team leaders must not be members of the juries judging their own country's team.

1.3 The PF regulations

1. Depending on the total number of teams, a PF involves preferably three or, optionally, four teams. In the course of a PF, team members are only allowed to communicate with participants of the same PF. Before the beginning of a PF, the jury and the teams are introduced.
2. The PF consists of three (or four) Rounds. In each Round, a team plays one of the three (four) roles: Reporter, Opponent, Reviewer (Observer). In the subsequent rounds of the PF, the teams change their roles according to the following schemes:

Three teams PF				Four teams PF				
Team/Round	1	2	3	Team/Round	1	2	3	4
A	Rep.	Rev.	Opp.	A	Rep.	Obs.	Rev.	Opp.
B	Opp.	Rep.	Rev.	B	Opp.	Rep.	Obs.	Rev.
C	Rev.	Opp.	Rep.	C	Rev.	Opp.	Rep.	Obs.
				D	Obs.	Rev.	Opp.	Rep.

3. Team captains may choose any available position in the PF (i.e. A, B, C). The order in which the captains choose their positions is determined at the beginning of each PF via the Captains' Fight. The fight's winner chooses whether he wants to be the first, second or third to write down his team's position. Then the captain that arrived second in the fight chooses and finally the teams' positions are decided. The problems for Captains' Fights are prepared by the LOC. The captain

fight consist of a challenging little task or test in physics/math, and cannot exceed 3 minutes, except during the final where they can be extended to 30 minutes and multiple problems to solve.

1.4 The stage regulations

1. The PF is ruled by a chairperson, selected by the LOC. Each Stage schedule is regulated by the chair according to the following table:

The performance order in the Stage of a PF	Reserved time in minutes
1. The Opponent challenges the Reporter to present a problem	1
2. The Reporter accepts or rejects the challenge	1
3. Preparation of the Reporter	5
4. Presentation of the report, Selective PF (final)	10(12)
5. Questions from the Opponent to the Reporter and answers of the Reporter	2
6. Preparation of the Opponent	3
7. The Opponent's speech	5
8. Discussion between the Reporter and the Opponent	5
9. Questions from the Reviewer to the Reporter and the Opponent and their answers	2
10. Preparation of the Reviewer	1
11. The Reviewer's Speech	3
12. Discussion between the Reviewer, Reporter and the Opponent	4
13. General discussion between the teams (any member of any team except Observers)	5
14. Concluding remarks by the Reporter	1
15. Questions from the Jury	6
16. Jury decides marks	1
17. Jury remarks/comments	4
Total Time for a Physics Fight	58

2. Each team participating in a PF has the right to use one time-out during the whole PF (consisting of three or four rounds). The time-out lasts for one minute and during the time-out every participant of the round can consult with his team. The time-out cannot be taken during any team's presentation.
3. In the Final PF the challenge procedure is omitted. The chair of the fight is responsible for the teams and juries' introduction, the Captain's Fight, timing and fair play in general. In some cases, the chairperson is allowed to give a mark as an additional jury member (this is reserved for experienced chairs only).

1.5 Security concerns

1. When working on the problems, participants and individual IOC representative must abide by the laws and regulations of their country and university. The IOC as a whole cannot be held responsible for any damage caused when working on the experiments.
2. The participants can ask the LOC at the latest three weeks in advance for supplementary safety material (wooden box, safety walls, etc...) to be used during the tournament. Providing or not this material is at the discretion of the LOC.
3. The chairperson can forbid the participants to perform an experiment live if he/she thinks the safety of the public and/or jury members is compromised. Prior to the tournament, the participants can ask the LOC if they are unsure about the possibility to perform an experiment.
4. During the competition, the participant(s) performing an experiment will not hold the organizers responsible for any damage or injury which may result thereof.

1.6 Team's performance in rounds

1. The Reporter presents the essence of the solution to the problem, attracting the attention of the audience to the main physical ideas and conclusions. It is strongly recommended that the Reporter presents some original ideas and a self-made experiments in the report.
2. The Opponent puts questions to the Reporter and criticizes the report, pointing to qualities and/or possible inaccuracies and errors in the understanding of the problem and in the solution. The Opponent analyses the advantages and drawbacks of both the solution and the presentation of the Reporter. The discussion between the Opponent and Reporter should focus on how to correct or improve the Reporter solution. Some experimental results obtained by the Opponent that clearly exhibit the inconsistencies of the Reporter's model and/or short calculations that show the errors or inapplicability of Reporter's theory can be presented in a very brief way. The Jury should decide on the relevance of such elements for the discussion. At the end of the discussion, the participants should agree on what can be changed/improved on the Reporter solution.
3. The Reviewer presents a short summary of the presentation of the Reporter and Opponent. The Reviewer presentation should mention in particular if the discussion between the Reporter and Opponent has been fruitful or not, and why. The Reviewer can mention which aspects of the problem could have been addressed, but cannot mention his own results on the problem. The main goal of the Reviewer is to summarize the work done by the Reporter and the Opponent as from a jury member point of view, in order to help the jury decide their marks. In the following discussion between all the participants, the Reviewer will moderate the discussion between the Reporter and Opponent, helping them to focus on the most important physical points of the problem.
4. The Observer does not participate in the PF.
5. During a PF only one member of a team takes the floor as an Opponent or a Reviewer but there can be up to two Reporters. Other members of the teams are allowed to help with the presentations technically. There are no limitations on communication between team members during the preparation time. The team members are allowed to give their players brief remarks in written form at any time, except for the Reporter's, Opponent's and Reviewer's presentations.
6. No member of a team is allowed to take the floor more than twice during a Selective PF. During the Final PF any team member can take the floor only once.

1.7 The rules of the problem challenges and rejections

1. All problems presented during a PF must be different.
2. Selective Physics Fight: The Opponent may challenge the Reporter on any problem with the exception of a problem that: a) was permanently rejected by the Reporter earlier; b) was presented by the Reporter earlier; c) was opposed by the Opponent earlier; d) was presented by the Opponent earlier. If there are no problems left to challenge, the bans d), c), b), a) are successively removed, in that order.
3. The Reporter may tactically reject the challenge of three different problems in each selective PF without penalty. In addition to this, each team has one permanent rejection that once made, applies to all future Selective PFs.
4. Every additional rejection is considered as a tactical or permanent rejection (by team choice) and induces a penalty. For each penalty the coefficient of the Reporter is decreased by 0.2. This reduction continues to apply during the following Selective PFs.
5. Final Physics Fight: The teams participating in the Final choose the problems they will report themselves and proclaim them at a meeting of all the finalists. The teams choose their final problems in the order determined by selective PFs results, the team with the most points first. No team can choose a problem already chosen by another team.

1.8 The grading

1. After each stage the jury grades the teams, taking into account the presentations, questions, answers to the questions and participation in the discussion.
2. Each jury member shows integer marks from 1 to 10. If there are five or six jury members one lowest mark is discarded, if there are seven or eight jury members one lowest and one highest mark is discarded. For larger jury numbers, the number of discarded marks is quarter that of the jury members, rounded up (if this number is odd, one more of the lowest marks is discarded than of the highest).
3. This sum is used to calculate the mean mark for the team. The mean marks are multiplied by different coefficients: 3.0 or less (see section 1.7 — “The rules of problem challenges and rejections”) for the Reporter, 2.0 for the Opponent, 1.0 for the Reviewer and then transformed into points.

1.9 Extra points and total sum of points

1. For a team in a PF the sum of points (SP) is the sum of mean marks, multiplied by the corresponding coefficients and rounded to one decimal. Additionally, the team which won the PF receives 2 additional points and the team which arrived second 1 extra point. In case of ex aequo, 3 points are divided between all teams that won the first place in the PF.
2. The total sum of points (TSP) of a team in the tournament is equal to the sum of SPs in all Selective PFs. The number of fights won (FW) is the number of Selective PFs, in which a team received the highest SP amongst the three or four teams participating in the same PF.

1.10 The final

1. The three or four teams having the highest TSP in the Selective PFs participate in the final.
2. The total sum of points of the third, fourth and the fifth teams are defined as TSP3, TSP4 and TSP5 respectively. The fourth team enters into the final if and only if $(TSP3 - TSP4) \leq (TSP4 - TSP5)/2$. In the case of teams having equal TSP, their participation in the final is decided by fights won.
3. The podium order is decided by the points awarded during the final only.

1.11 Research ethics requirements and Penalties

1. All the equations, their derivations as well as simulation and experimental results must be documented properly, with clear links to all the sources used.
2. The participant’s original work and results must be documented either in the main part of the presentation or on additional slides that must be presented upon request. The documentation must be detailed enough to establish the authorship of the work: a) For a theoretical result, it is advised to have all the calculations leading to this result on additional slides. b) For numerical simulations, it is advised to prepare the program source as well as some tables or plots from its output. c) For the experimental work, it is requested to have a photo/video of the experimental setup in the main part of the presentation. Questions can be asked during or after the fights by the jury members about specific part of the setup or certain data points; it is thus advised to have enough supplementary material to answer any questions related to the steps of the experimental process.
3. The opponent and the reviewer teams are allowed to request the documentation listed above and to point out to the jury the acts of plagiarism if they are discovered. The jury members take into account the penalties according to internal guidelines.
4. If an act of plagiarism is discovered after the PF, the jury reserves a right to apply punishment measures in the period between the selective PF and the final, if the foul happened during the selective PF, or within one year after the final, in which the act of plagiarism occurred.

5. The severity of a case is decided by the jury members as soon as possible. Light foul measures are decided by jury members of the corresponding fight. In case of severe rules violation the penalty is decided by a council formed by the IPT President and ruled by the President of the Jury, in attendance of the offending team and team leaders during some parts of the hearing. The offending team may appeal against light foul penalties to a council decision. The jury council decision is irrevocable.
6. Unethical, sarcastic, discriminatory and other disrespectful behaviour leads to penalties ranging from a warning to disqualification of the team.

1.12 Alternative presentations sessions

1. After the end of the selective PFs and before the Final, if the schedule allows, the LOC organises one or two alternative presentations sessions. It determines the place, time and format of these events.
2. The teams that are not participating in the final are invited to present their solutions to the problems they haven't presented in the selective PF. These sessions are facultative, and have no impact on the final ranking.
3. Problems to be presented in the Final cannot be reported during the alternative presentations sessions.