

# Indian National Selection Rules

## International Physicists' Tournament

### Preamble

The current draft is the provisional and only state to inform of the rules which are expected to be followed in the upcoming edition of the National Selections in India.

Under the Section 1.4 of the International Physicists' Tournament Rules<sup>1</sup>, we restate the conditions for the IOC to recognise the result of a National Selection -

- There is no discrimination of any sort regarding the participants nor the teams as a whole
- The national selection gathers at least two teams of a minimum of three students each and features at least two Physics Fights with at least one Presentation and one Opposition. The Physics Fights timing can be freely adapted from the stage regulation
- Each participating team has the option to participate in the national selection for free. The team can, however, be charged for catering, housing, and transport services but this should remain optional
- The winning team is fully eligible to arrange the participation to the IPT with or without the help of their respective IOC member and is not responsible for any expenses except for those needed to participate by themselves

### Organisational structure

#### General Provisions

- (a) The participating universities from each university from the country may form a Local Organising Committee (LOC), which will support their team and as well as form a provision to hold the National Selections in the future. Each LOC may have a group of professors and Ph.D. students.
- (b) A National Committee (NC) will consist of each representative from their universities' LOC, as well as independent professors/individuals who will help to decide the location of the National Selection, invite jurors and help to conduct the event.

#### Registration fees

- (a) The LOC of the decided university for National Selections will organize the basic amenities required for the event. They will decide on the nominal registration fees per accommodation and logistics. The teams themselves must bear the cost of transportation to the designated university.
- (b) The organizing LOC should also reveal the distribution of the costs borne to conduct the event, to the NC for the record.

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<sup>1</sup>[https://iptnet.info/wp-content/uploads/2019/07/International\\_Physicists\\_Tournament\\_Rules-20190705.pdf](https://iptnet.info/wp-content/uploads/2019/07/International_Physicists_Tournament_Rules-20190705.pdf)

## **Procedural rules**

### **Composition of the team**

1. Every team should consist of 4 to 6 members and up to 2 team leaders.
2. Up to 6 members can officially represent to be the part of Physics Fights. There will be three roles of each participant; Reporter, Opponent, and Reviewer. Additional details to their role are given in the "Team's performance in rounds" section.
3. Additional participants may join the tournament but will not be allowed to participate in Physics Fights.

### **Structure of National Selection**

1. The National Selection will compose of selective Physics Fights (PFs), leading to final Physics Fight with the top 3 teams.
2. In case of participating teams being less than 3, a proposal to form a joint team will be given which upon it's declining by either of the team will be followed with the following PF structure - three fights, reporter and opponent roles only.
3. Certain constraints over the kind and number of Physics Fights will be defined from the number of participating teams
  - (a) In case of many teams being 3 - three PFs among them, with all components.
  - (b) In case of many teams being 4 to 6 - PFs will only have components of Reporter and Opponent.
  - (c) For participating teams being more than 6 - PFs will have all the components. A pre-selection (based on report submission) will be organized per the number of teams and the logistics available by the organizing university.
  - (d) The final will always consist of the top 3 teams with all components.
4. The LOC of the organizing University will decide on the ordering of the teams for the PFs.

### **The jury**

1. The jury is nominated and organized by the National Committee (NC). The jury consists of at least three members per Physics Fight, preferably from different universities.
2. One member of the jury is nominated as president of the jury by the LOC of the organizing university. Their role is to moderate the discussions and conflicts about jury decisions and performances.
3. Team leaders, at least one from each team, may be included in the jury providing the team has a team leader eligible for judging. Multiple jury members from the same university must be distributed uniformly across the fights. Team leaders must not be members of the juries judging their own university's team.
4. The LOC, in cooperation with the NC, can decide at its discretion to use or not the team leaders as jury members for any fight.

## The PF regulations

1. Depending on the total number of teams, a PF involves preferably three or, optionally, two and 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 two/four) Rounds. In each Round, a team plays one of the three (four) roles: Reporter, Opponent, Reviewer (Observer) [For two teams the roles are: Reporter and Opponent]. In the subsequent rounds of the PF, the teams change their roles according to the following schemes:

Two teams PF			Three teams PF				Four teams PF				
Round	1	2	Round	1	2	3	Round	1	2	3	4
A	Rep.	Opp.	A	Rep.	Rev.	Opp.	A	Rep.	Obs.	Rev.	Opp.
B	Opp.	Rep.	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. The captain that arrived second in the fight chooses and finally, the teams' positions are decided. The problems for the captains' fights are prepared by the LOC of the organizing university, with available help from NC. The captain fights 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.

## The stage regulations

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

Table 1: Breakdown of a Physics Fight

The performance order in the Stage of PF	Reserved time in minutes
01. The Opponent challenges the Reporter to present a problem	1
02. The Reporter accepts or rejects the challenge	1
03. Preparation of the Reporter	5
04. Presentation of the report, Selective PF	10 (12 for final) (10 for two team PF)
05. Clarifying questions from the Opponent to the Reporter and answers of the Reporter	2
06. Preparation of the Opponent	3
07. The Opponent's speech	5 (5 for two team PF)
08. Discussion between the Reporter and the Opponent	5 (10 for two team PF)
09. Clarifying questions from the Reviewer to the Reporter and the Opponent and their answers (N/A for two team PF)	2
10. Preparation of the Reviewer (N/A for two team PF)	1
11. The Reviewer's Speech (N/A for two team PF)	3
12. Discussion between the Reviewer, Reporter and the Opponent (N/A for two team PF)	4
13. General discussion between the teams (any member of any team except Observers) (N/A for two team PF)	5
14. Concluding remarks by the Reporter	1
15. Questions from the Jury	6 (10 for two team PF)
16. Jury decides marks	1
17. Jury remarks/comments	4 (6 for two team PF)
Total Time for a physics Fight	59 (44 for two team PF)

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. The chair of the fight is responsible for the introduction of the teams and jurors, the captain's fight, timing and fair play in general.

## Security concerns

1. The participants can ask the National Representative 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 of the organizing University.
2. The chairperson can forbid the participants to experiment live if they think the safety of the public and/or of the jury is compromised. Before the tournament, the participants can ask the LOC if they are unsure about the possibility of the experiment.
3. During the competition, the participant(s) experimenting will not hold the organizers responsible for any damage or injury which may result thereof.

### **Team's performance in rounds**

The following section is inherited from Section 2.6 of the International Physicists' Tournament Rules

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 compares his theoretical results with those obtained by self-made experiments, when possible.
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 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 exhibit the inconsistencies of the Reporter's model and/or short calculations that show the errors or non-feasibility of Reporter's theory towards applications 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 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 results on the problem. The main goal of the Reviewer is to summarise the work done by the Reporter and the Opponent as from a jury member's point of view, 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 during the Reporter's presentation. 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 PF. Furthermore, during the Final PF, any team member can take the floor only once.

### The rules of the problem challenges and rejections

1. All problems presented during a PF must be different.
2. The Opponent may challenge the Reporter on any problem except 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 PF without penalty. In addition to this, each team has **one free permanent rejection** which may be used at any moment, and without penalty.
4. Every rejection in addition to those defined above is considered as a permanent rejection and induces a penalty. For each incurred penalty the coefficient of the Reporter is **decreased by 0.1**. This reduction continues to apply during the following PFs.
5. Permanent rejections, once made, apply to current and all future PFs.

### 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.
  - (a) If there are four or five jury members the lowest mark is discarded if there are six or seven jury members one lowest and one highest mark is discarded.
  - (b) The jury members cannot be larger than seven.
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 — “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.

### Extra points and the total sum of points

The following section is inherited from Section 2.9 of the International Physicists’ Tournament Rules

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 hundredth. Additionally, the team which won the PF receives 2 additional points and the team which arrived second receives 1 extra point. In the 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 is equal to the sum of SPs in all PFs. The number of Fights Won (FW) is the number of PFs, in which a team received the highest SP among the three or four teams participating in the same PF.

## The final

1. Three teams are qualified in the finals.
2. 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 the problems based on their previous rankings. No team can choose a problem already chosen by another team.
3. The podium order is decided by the points awarded during the final only.

## Research ethics requirements and Penalties

We completely abide by the rules inherited from section 2.12 of the International Physicists' Tournament Rules in regards to penalties given to a team that does not follow the ethic requirements as given -

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 a 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 opposing and the reviewing 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 listed below when grading the presentation. In case of serious fouls (described in 5.b), additional punishment measures are applied.
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. Actions and behavior that may be considered as cheating or plagiarism trigger punishment measures upon the offending team. The possible measures are:
  - (a) Minor punishments are applied in case of light fouls. This implies actions that may lead the jury members to believe that the results are produced by the presenter team, while they are not:
    - not stating the source of the general-knowledge formula used for the further derivations results in a warning.

- using the qualitative explanation of the phenomenon without citing the source results in a warning.
- not citing the source of equation derivation results in a warning.
- If more than two warnings are given in a single physics fight, the punishment can result in one or many of the punishment listed below.
- using a graph, figure or video published previously without citing the source - up to 3 points penalty.
- not citing the source of the theoretical models - up to 5 points penalty.
- not citing the source of the computer simulations results - up to 5 points penalty.
- not citing the source of the experimental results - up to 5 points penalty.

These points are given in terms of the total score of a team in the PF.

In case the foul is revealed by the opponent or the reviewer teams, each jury member applies approximately the corresponding penalty divided by 3 when grading the presentation.

- (b) Severe penalties are applied to the conscious violations of rules. This includes a team claiming to have produced their presented results, which appear to have been previously published and claim to be their work. The penalties that may apply are:
- a figure, a graph or a video - up to 5 points penalty.
  - the theoretical model - up to 8 points penalty.
  - the computer simulations results - up to 8 points penalty.
  - the experimental results - up to 8 points penalty.
  - a large part of the presentation if the reporter nevertheless shows a good knowledge of the presented work - up to 10 points penalty.
  - entire presentation, not understanding the elements of the copied presentation or other severe cases of crude research ethics violation- up to total team disqualification and annulment of the PF results.
- (c) 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 NC 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.
- (d) A penalty of 2-10 points is applied in case of:
- data falsification or fabrication,
  - lack of documentation proving that the experiment took place.

The severity of each case is decided by the jury members of the PF analogously to the cases of plagiarism.

- (e) Unethical, sarcastic, discriminatory and other disrespectful behavior leads to penalties ranging from a warning to disqualification of the team.