

Rules of Physics Brawl Online

PARTICIPATING IN THE COMPETITION

Registration for the Competition

- To participate in the competition, pre-registration is required at <https://physicsbrawl.org>.
- By registering for the competition, each team agrees to follow the Rules of Conduct and these Rules of Physics Brawl Online and confirms they have made themselves acquainted with them.
- A team consists of 1-5 competitors.
- To compete in categories A, B, or C, all team members must be high-school students, primary school students, or their respective equivalents. There is also an Open category (non-competitive) for other competitors that do not meet the criteria for A, B, or C categories.
- Each contestant can compete in only one category and be a member of only one team (see Designation into Categories).
- The name of a team cannot spread political or religious views, cannot be insulting, or be in any other way inappropriate. The head organizer has a right to change the name of such a team, censor it, or disqualify the team completely.
- By registering in the competition, the team members agree with publishing the results of their team in the form of basic information (your name, surname, category, school, and points) in the results list in both print and digital outputs.

Designation into Categories

- Teams compete in three categories; to which they are placed based on the following algorithm.
- Each contestant is assigned a coefficient based on the expected year of high school graduation. A contestant who is in the final, i.e., graduating, year of secondary education at the time of the competition (specifically, a school corresponding to level 3 of the ISCED 2011 classification) is assigned a coefficient of 4. A contestant in the penultimate year is assigned a coefficient of 3, and so on. The lowest possible coefficient is 0 (this is assigned to pupils of primary schools and the corresponding years of multi-year grammar schools).
- The coefficient of a team is calculated as the arithmetic mean of the coefficients of individual competitors (they are added together and divided by the number of competitors).
- The team is assigned the lowest category whose conditions it satisfies:
 - category A: team coefficient ≤ 4 ,
 - category B: team coefficient ≤ 3 and maximum of two competitors have a coefficient of 4,



- category C: team coefficient ≤ 2 , no member has a coefficient of 4, and a maximum of two competitors have a coefficient of 3.
- If a team member cannot be assigned a coefficient according to the rules above, the team will automatically compete in the Open category.
- All categories share the same set of problems.
- Each category of the competition has a separate results list.

DESCRIPTION OF THE COMPETITION

Competition Environment

- The competition is held exclusively online via the competition environment, which you can access from the Physics Brawl Online website. The link to the competition environment will also be sent to the contestants by email.
- The teams log in with their team password, which they will receive shortly before the beginning of the competition in an email message.
- Problems will be published in the form of PDF files in the competition environment after the start of the competition.
- Teams send the results directly via the competition environment. Results sent by other means (email, etc.) will not be accepted.
- Official announcements from the organizers will be communicated via the online board, only exceptionally by email. The teams are obliged to watch the online board.
- During the competition, the up-to-date results of all teams are posted. However, these will be hidden 20 minutes before the end of the competition.

The Competition System and Awarding of Points

- The competition lasts 3 hours.
- Teams solve the problems. For each correct answer to a problem, the team receives a new problem from the particular series (unless the solved problem is the last problem in the series).
- The competition consists of two parallel parts - the Main series and the Hurry-up (consisting of three series); more details are below.
- The competition consists of 4 parallel series.
- Every problem is specified by the maximum score, which the team receives for submitting the correct answer on the first attempt. The maximum score the team can get for the particular problem lowers after submitting incorrect answers (see the Main series or the Hurry-up series).
- The team aims to receive as many points as possible.
- After an hour and a half into the competition, the option of skipping the problems activates.
- The team loses 1 point for skipping an unsolved problem in the series, and a new problem will become available. The skipped task can no longer be answered. Each team can skip up to 10 problems.

- If the team answers a problem incorrectly, they will not be allowed to submit an answer for 1 minute in that particular series.
- If a serious issue is discovered with a competition problem, organizers reserve the right to modify or eliminate it without compensation.
- During the competition, all competitors are allowed to communicate only with their team members or the organizers. Any interaction with teachers, other teams, etc. is strictly forbidden.
- The teams use computer(s) or other electronic equipment with access to the internet to solve the problems. Furthermore, teams are permitted to use calculators and writing or drafting supplies.
- Teams are permitted to use the internet and any literature as a source of information. The use of generative artificial intelligence tools is strictly prohibited. This includes but is not limited to, tools such as ChatGPT capable of generating complex, coherent, and contextually relevant answers to questions posed by the user.
- The competition is based on fair play. The course of the competition is monitored to prevent cheating.
- It is forbidden to use abusive language, give hints to other teams, or discuss solutions, in the official communication channel of the competition.

The Main Series

- At the beginning of the Main series of the competition, each team receives 7 problems. After solving any problem from this series, another problem becomes available. The series contains approximately 50 problems. The exact number of the problems is not published in advance.
- Each of the problems is characterized by the maximum score, which is awarded only if the team answers the problem correctly on the first attempt.
- Points are awarded according to the following table (concerning the number of incorrect attempts):

no error (100 %)	1 error (~60 %)	2 errors (~40 %)	3 errors (~20 %)	4 or more errors
3	2	1	1	1
4	3	2	1	1
5	3	2	1	1
6	4	3	2	1
7	5	3	2	1
8	5	4	2	1
9	6	4	2	1



The Hurry-up Series

- One hour after the beginning of the competition, the option to answer problems from the Hurry-up series becomes available.
- Problems from this series are divided into three categories (mechanics M, usually electromagnetism E, others X).
- In the beginning, the team receives one problem from each category (i.e., problems M.1, E.1, X.1).
- After submitting the correct answer, the next problem from the respective category becomes available (e.g., the team correctly answers problem M.1, problem M.2 becomes available).
- Points are awarded according to the following table (concerning the number of incorrect attempts):

no error	1 error	2 errors	3 errors	4 or more errors
3	2	1	0	0
4	3	2	1	0

- During the first 30 minutes of the Hurry-up series (before the option of skipping the problems activates - see The Competition System and Awarding of Points) each team can get a bonus. The bonus is awarded for each completed triplet (i.e., successfully answered problems of the same number in all categories - e.g., M.1, E.1, X.1) and consists of doubling the points awarded for the particular triplet.
- These bonus points are displayed in the result sheet only in the “bonus points” and “total points” columns.
- After the option of skipping the problems activates, the Hurry-up problems remain available, but no bonus points will be awarded for the completed triplet.

Format of the Results

- The answer to every problem is always a number.
- The number of significant figures and the units of the answer are always written in the problem task.
- The values of some constants needed for the calculations are given in the list of constants available to each team. It is necessary to use these values to obtain the correct result within the tolerance interval. If the problem statement provides a different value, this value takes priority. If the constant is not specified, its value should be obtained from publicly available sources.



Conclusion of the Competition and Announcement of Winners

- The competition ends 3 hours after its start.
- The winner becomes the team with the highest number of points.
- In the event of a tied score, the earlier time of the last submitted correct answer shall prevail. In the event of a further tie, drawing lots will decide.
- Immediately after the competition has finished, the preliminary results are published.
- The contestants may appeal to the organizers up to 30 minutes after the end of the competition. Their remarks will be considered and eventually reflected in the results.
- After all remarks from the contestants are discussed, the final results will be published on the Physics Brawl Online website.

ADDITIONAL REMARKS

Breach of Rules

- In the case of a substantial suspicion of a breach of the Competition Rules or the Rules of Conduct, the head organizer has a right to perform special measures to confirm or rebut the suspicion and to prevent the continuation of disallowed conduct.
- If a team violates any of the Competition Rules or Rules of Conduct, the head organizer or a designated committee will determine the appropriate consequences for the team.
- In the case of a less serious breach of rules, the head organizer or a committee designated for this task by the head organizer can decide on the removal of a certain number of points from a team based on the severity of the breach.
- Organizers are allowed to disqualify a team that commits a severe breach of rules.
- In the case of an extremely severe breach of the Competition Rules or the Rules of Conduct, the Central Committee of the competition may decide to ban participation in the competition in the subsequent years or another punishment, to the competitors of the team and/or to any of the schools they come from. The organizer also reserves the right to share information about rule violations with the organizers of other competitions and activities organized or promoted by the CUNI MFF and with representatives of the competitors' schools.
- Extremely severe breaches of rules involve any intentional attempt to obtain the problems or their solutions before the competition, their publication, or disclosure to anybody outside their team. Any intentional attempts to impede the smooth running of the competition to the other participants or the organizers, or an attack on the competition server are also understood as extremely severe breaches of rules.

Final Remarks



- Organizers reserve the right to make minor changes in the rules before the start of the competition.
- Resolution of any potential conflicts or issues not covered by these rules is decided by the head organizer or an organizer designated by him. The team will be informed of these decisions at the email addresses provided in the application form.
- If a team disagrees with a decision made by the head organizer, they have the right to appeal within 14 days of the decision being made. The Central Committee of the competition will process the appeal and decide within 40 days of the appeal being submitted.
- These rules were ratified by the Central Committee of the competition Physics Brawl Online on September 19, 2023.
- These rules replace the previous version and come into effect on September 19, 2023.