

THE 55th—27th INTERNATIONAL—RUDOLF ORTVAY PROBLEM SOLVING CONTEST IN PHYSICS 31 January—10 February 2025 RULES OF THE CONTEST

The Physics Students' Association of Eötvös University, Budapest, the Roland Eötvös Physical Society and the Hungarian Association of Physics Students proudly announce the **55th**—and for the **twenty seventh** times **international**—Rudolf Ortway Problem Solving Contest in Physics, between 31 January 2025 and 10 February 2025.

Every university student from any country can participate in the Ortway Contest. Evaluation is separate for academic years, and accordingly PhD students compete in a separate category. Even so, secondary school students (not yet attending any university) are welcome to compete in the freshman (first year) category. The contest is for individuals: solutions sent by groups of students are not accepted. The name, the university (or school), the major, and the university year should be indicated on each solution. Pseudonyms and passwords cannot be used: each contestant has to use his/her own name.

The problems can be **downloaded** from the webpage of the Ortway Contest

<https://ortvay.elte.hu/>

in Hungarian and English languages, in pdf format, from **12 o'clock (Central European Time, 11:00 GMT), Friday, 31 January 2025.**

Despite all the efforts of the organizers, it may happen that some unclear points or misprints remain in the text. Therefore it is very useful to visit the webpage of the contest from time to time, as the corrections and/or modifications will appear there.

Each contestant can send solutions for up to 10 problems. 100 points can be awarded for the solution of each problem.

Any kind of reference material may be consulted; the applied textbooks and articles of journals must be cited according to the norms in scientific literature.

NEW RULE! Available databases, including chatbots based on artificial intelligence, should be considered equivalent to literature and publications: references should include the type and version of the system or database used. In addition, the output of the chatbot conversation(s) must be attached to the solution in a separate file. However, we draw attention to the fact that all sources used should be treated with sufficient criticism; it is the responsibility of the contestants to ensure that each submitted solution is thought through and calculated by them, and formulated in their own words. We cannot award points for machine solutions that do not even approach the essence of the task or contain serious principle errors.

Deadline for sending the solutions: 12 o'clock CET (11:00 GMT), Monday, 10 February 2025.

Attention! The solutions may be submitted *exclusively* only in an electronic format! Please convert all materials and written versions to pdf files. This can automatically be done for solutions written in LaTeX, whereas we kindly request the handwritten sheets to be scanned and converted to pdf as well.

Solutions may be accompanied with attached files (executable programs, pictures, tables). Please compress the executable files and upload it in the archived form.

In case any computer programs are appended to the solutions, these should be accompanied by detailed description and documentation (including specification of the programming language, usage, parameter setting, notations, interpretation of the output, preparing figures and graphs etc.)

Program code lines and text outputs must be presented in pdf form as well, arranging the results in a clear and intelligible format. Please make sure to give a complete list of the accompanying files and their content at the end of the written form of each solution.

Please save the solutions for each of the problems in separate files, and upload them separately (evidently, if solutions are handwritten, please prepare them on separate pages for each solution, and scan them so). If solutions for different problems are mixed, either by having written on the same page, or if one file contains more than one addressed problems, the submitted solutions are disregarded!

Please upload your solutions in an electronic form, using the program accessible from the website of the competition. Contestants must get registered first by filling out the form, also available at the website. The registration file opens on Friday, **31st January**. We kindly ask all participants to register at least few days before the deadline, to avoid last minute rush. Please give precise information in the form concerning personal and educational data; incomplete registration will be declined by the system.

Please indicate clearly in which category (grade) you wish to compete (from first to fifth grade or PhD student). This must be evident for physics or physics-engineer majors or all those who study physics as their principal subject: in this case the actual year must be indicated. Those who missed some semesters or by any reason the grade is unclear, should try to choose in the most reasonable way. It is a basic rule that one can round upwards but not downwards: a fifth year student should not compete among the second year students. Other students who study physics not as a major subject, or if eventually they do not study physics at all, should make the choice on their own accord. Secondary school students should in any case choose the first grade. PhD students studying physics or similar subjects must indicate the PhD category. In case of serious doubt, please contact the organizers via the mail address **info@ortvay.elte.hu** before **5th of February**.

Those who fill out the form will receive a confirmation e-mail. Clicking on the given link the registration is validated.

Registered contestants may log in with their identifier and password and can upload their solutions in the data base. The system accepts a number of different file types, but as it was indicated above, the text of the solution must be in the preferred pdf format. The maximum size of any single file can be 1MB. (To compress the pdf files we suggest a program:

https://www.ilovepdf.com/compress_pdf.)

A maximum number of five files can be uploaded for any problem. Please upload the essays and the accompanying files matched with the corresponding problem number. Consider that no complaints are acceptable due to erroneous upload.

Upload may start already after the registration, ie. **Friday, 31st January**, in arbitrary order, but the transfer must be completed at latest by the end of the competition, that is by **noon (11:00 GMT) on the 10th of February**. In case of technical problems please write a mail to

info@ortvay.elte.hu

The contest will be evaluated separately for each university year, according to the total number of points. The referees reserve the right to withhold, to multiply or to share some prizes. Beyond the valuable prizes given for the first, second, and third places, honorable mentions and special prizes for the outstanding solutions of individual problems can be awarded. This is why it is worthwhile sending even one or two solutions.

The announcement of the results will take place in the middle of April, 2025. The detailed results will be available on the webpage of the contest thereafter. Certificates and prizes will be sent by mail. The electronic version of the certificate will also be available.

No other official proof of participation—except to those awarded with a prize—can be issued by the Organizers.

Wishing a successful contest to all our participants,

*the Organizing Committee:
Gyula Dávid, József Cserti, János Koltai, and Róbert Németh
The original Hungarian text is translated by Dezső Varga*

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