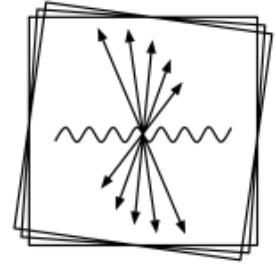


$$\nabla \times \mathbf{E} = -\frac{\partial \mathbf{B}}{\partial t}$$

$$\oint \mathbf{E} \cdot d\mathbf{l} = -\frac{d\Phi_B}{dt}$$



$$H_0 = E_0$$

$$|\mathbf{r}_1 - \mathbf{r}_2| = r$$

$$(\Delta x)^2 + (\Delta y)^2 \geq \frac{h^2}{4m^2}$$

$$S = k_B \ln \Omega$$

$$dU = TdS - PdV + \mu dN$$

$$z = \sum_i e^{-\beta \epsilon_i} \quad \frac{dU}{dt} + \mathbf{v} \cdot \nabla U = 0$$

$$C = \frac{1}{2} m \dot{\theta}^2 - V(\theta)$$

International Physics Competition

Information Flyer



$$Q_{in} + \Delta Q_{in} = \frac{dQ}{dt} T_{in}$$

$$\mathbf{B} = \frac{\mu_0}{4\pi} \int \frac{d\mathbf{l} \times \mathbf{r}}{r^3}$$

$$p = \frac{h}{\lambda} = \frac{h}{vT}$$

$$\omega = \sqrt{\frac{g}{L}}$$

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$$l = \int r \sin \theta$$

$$r = \frac{h}{p}$$

$$x = \frac{mv_x}{m}$$

$$T_{in} = \frac{1}{2} v^2 (0.001 + 0.001 - 0.001)$$

$$J_0 = \frac{m \dot{\theta}^2}{2} \sin^2 \theta$$

1 What is IPHyC?

1.1 Vision, Mission, and Values

Physics is the fundamental science that explores the laws governing our universe, from the smallest subatomic particles to the vast cosmos. Understanding the physical world empowers us to solve complex problems, develop new technologies, and push the boundaries of human knowledge. Our society urgently needs talented physicists, engineers, and researchers to advance scientific understanding and tackle the challenges of tomorrow.

The International Physics Competition offers students a platform to challenge their analytical and problem-solving skills, explore diverse physics concepts, and delve deeper into this exciting discipline beyond the standard school curriculum. We believe that blending education with friendly competition can inspire students to develop a lasting passion for physics, potentially leading to fulfilling careers in research, engineering, or scientific innovation.

The International Physics Competition aims to be accessible to all students from all countries, regardless of their background, school, or institution: all you need is a pen, paper, and an internet connection to join!

1.2 What makes IPHyC unique?

While competition is part of IPHyC, our core mission is to foster genuine engagement with physics, sparking curiosity and encouraging further exploration in this and related scientific fields. IPHyC is a learning journey, enabled by diverse problem formats that enhance a student's understanding through practical application. Key aspects that distinguish IPHyC include:

- **Internationality:** From the very first round, IPHyC is a truly global event. All participants tackle the same challenges, ensuring fair assessment and fostering international connections.
- **Digital Accessibility:** We utilize the power of the internet to open participation to students everywhere, regardless of geographic location or school affiliation. While teacher guidance is beneficial, motivated individuals can participate independently from anywhere.
- **Diverse Physics Topics:** IPHyC embraces the full scope of physics. The competition covers a broad set of topics, including mechanics, electrodynamics, thermodynamics, quantum mechanics, relativity, fluid dynamics, and optics. These are presented through conceptual problems, mathematical derivations, and analytical challenges that require deep understanding of physical principles and problem-solving creativity.
- **Real-World Research:** Bridging the gap between academic learning and cutting-edge research is vital in physics. IPHyC problems typically incorporate concepts from recently published research papers in areas such as condensed matter physics, astrophysics, particle physics, and quantum technologies. This unique feature provides many participants with their first exposure to actual physics research and current scientific discoveries.

- **Scaling Difficulty Levels:** Our problems are designed to engage both experienced physics enthusiasts and those beginning to explore the subject beyond the classroom. The difficulty ranges from approachable exercises that reinforce foundational concepts to advanced challenges that introduce novel formats and require deeper analytical thinking. This ensures a rewarding and intellectually stimulating experience for all participants.
- **Online Tools for Educators:** We equip teachers and schools with resources and support. A dedicated teacher interface allows for streamlined management of student submissions, results tracking, certificate access, and supervision of the Final Round exam.
- **Local Communities & Representatives:** IPhyC encourages the formation of local student groups focused on physics. Our Representative Program empowers motivated students to inspire peers, organize local events, and build vibrant communities centered around shared interests in physics.

2 Who can participate?

Current high school and university students from all grades and countries are invited to participate. We have three age categories:

Junior: 10th Grade and below (and < 16 years of age)

Youth: 11th to 13th Grade (and < 19 years of age)

Senior: 1st Year College/University and higher (or ≥ 19 years of age)

Students from all age categories will receive the same problems in all rounds. However, the number of problems required to advance differ based on your age group. To succeed, you'll need curiosity, analytical thinking, mathematical skills, and creativity. As some problems involve exploring research materials, strong reading comprehension in English is helpful. A reliable internet connection is necessary for participation and submission.

My age or grade changes after the submission deadline. Which group do I belong to?

Your grade/age on the day of the Qualification Round submission deadline determines your age group for the entire competition duration.

Do I have to be a student to participate?

Yes, participation is open to students currently enrolled in high school, college, or university. If you are in a transitional period (e.g., gap year between high school and university) and intend to begin university studies soon, you are also welcome to participate.

3 Why participate?

The International Physics Competition is foremost an educational initiative, enabling students to develop and demonstrate their analytical skills across a wide range of physics challenges. To foster enthusiasm and friendly competition, participants also receive certificates and have the opportunity to earn awards, cash prizes, and international recognition. The prizes amount to a total value of over 1,500 USD.

3.1 Prizes and Awards

Every participant receives a certificate acknowledging their effort. In the Final Round, exceptional performance is recognized with Bronze, Silver, or Gold Honours. The top students in each age category receive 1st, 2nd, and 3rd Prizes, while National Awards are presented to the highest-scoring participants from each country.

Senior Category

1st Prize	250 USD	Cash Prize, Special 1st Prize Certificate
2nd Prize	175 USD	Cash Prize, Special 2nd Prize Certificate
3rd Prize	125 USD	Cash Prize, Special 3rd Prize Certificate

Youth Category

1st Prize	200 USD	Cash Prize, Special 1st Prize Certificate
2nd Prize	150 USD	Cash Prize, Special 2nd Prize Certificate
3rd Prize	100 USD	Cash Prize, Special 3rd Prize Certificate

Junior Category

1st Prize	175 USD	Cash Prize, Special 1st Prize Certificate
2nd Prize	125 USD	Cash Prize, Special 2nd Prize Certificate
3rd Prize	100 USD	Cash Prize, Special 3rd Prize Certificate

We further honour the following achievements, which are outlined in the sections below:

Additional Honours

National Awards	Special National Award Certificate
All Finalists	Participation Certificate with Bronze, Silver, or Gold Honour
All Participants	Official Participation Certificate

Who will receive National Awards?

Reflecting IPHyC's global outlook, we recognize the top three participants from each country who achieve at least 50% of the total points in the Final Round. These students receive a National Award certificate, and a list of top national performers will be published on our website.

3.2 Awards for Representatives

Each year, we recognize the dedication and impact of our most active representatives with special awards. Based on the number of students they inspire, their documented activities, and their community engagement, the following awards are presented:

Representative Award for Most Overall Participants

1 Award

Awarded to the representative who successfully encouraged the highest number of students to join IPHyC.

Representative Award for Most Finalists

1 Award

Awarded to the representative whose guidance helped the most students reach the Final Round.

Representative Award for Excellent Encouragement

Multiple Awards

Presented to representatives who demonstrate outstanding commitment within their communities by organizing impactful events, inspiring students to explore physics, or providing meaningful support to IPHyC participants.

3.3 Awards for Schools

In recognition of the vital role educators and institutions play in nurturing talent in physics, IPhYC presents three types of school awards (non-monetary) to honor their efforts:

School Award for Most Participants

1 Award

Awarded to the school with the highest number of registered participants in the Qualification Round.

School Award for Most Finalists

1 Award

Awarded to the school with the most participants qualifying for the Final Round.

School Awards for Excellence

Multiple Awards

Presented to schools that demonstrate strong overall student performance, foster a supportive environment for participants, or show exceptional commitment to promoting physics education through IPhYC.

How do schools participate to win these awards?

Schools automatically participate when students register using the school's name. Please ensure all students enter the school name accurately and consistently. We also encourage teachers from participating schools to register on our educator platform.

3.4 Further Achievements

Engaging in international competitions like IPhYC contributes to personal growth and strengthens your academic profile. It offers a unique opportunity to refine problem-solving skills, engage with real-world physics concepts, and connect with peers who share a passion for science and physics.

Global Network: Successful participants and winners join the international IPhYC network: a community of talented, motivated students from around the world. This network fosters collaboration, inspiration, and lasting connections. Access details are shared with qualified participants.

Opportunities (e.g., Internships, Scholarships): The IPhYC team curates and shares information about relevant international and regional opportunities, including internships, scholar-

ships, research programs, science events, and other competitions. These are shared directly with qualifying participants and through the alumni platform.

Regional Meetups & Events: The IPhyC team will organize meetups, workshops, and study sessions in various regions. All participants are welcome to join and engage with fellow physics enthusiasts in a collaborative learning environment.

Do I receive a hard copy of the certificate(s)?

Hard copies of certificates will be mailed to all 1st, 2nd, and 3rd Prize winners. All other participants, including finalists receiving Honours, will receive high-quality digital certificates (PDF) featuring permanent verification IDs, accessible via:

<https://iphyc.org/verify>

4 Process and Rounds

The International Physics Competition is divided into three rounds: the Qualification Round, Semi-Final Round, and Final Round. Each round features unique challenges that test and deepen your understanding of physics and problem-solving.

4.1 Qualification Round

The Qualification Round is the starting point of the competition. It includes five physics problems (labeled A - E), designed to be accessible whilst spanning a range of physics topics. Each problem is worth 5 points. To qualify for the Semi-Final Round, participants must meet the following minimum scores: 15 points (Junior), 17 points (Youth), or 20 points (Senior). All participants receive participation certificates. There are no fees or registration costs to participate in the Qualification Round.

Qualification Round Deadline

The submission deadline for the Qualification Round is **Sunday, 1 February 2026**, 23:59 UTC+0. This deadline is strictly enforced, so please plan accordingly.

Problems

Problems in the Qualification Round cover foundational physics concepts, requiring logical reasoning, mathematical analysis, and problem-solving skills. The problems span various physics topics including mechanics, electromagnetism, thermodynamics, and modern physics, ensuring engaging challenges across skill levels.

Solution and Submission Information

Participants must prepare a solution document with written explanations for **all problems**. Participants may submit their solution document in one of two formats:

- Digitally typed solutions (recommended), using LaTeX or a standard word processor.
- Clear scans or photos of handwritten work. Multiple pages must be combined into a single PDF.

It is essential that participants show their work clearly for all problems. Points are awarded for demonstrating correct reasoning and solution steps, even if the final answer is incorrect. Mathematical derivations, physical explanations, diagrams, and clear presentation of calculations are

all important components of a strong submission.

When you submit your solution, a participant account will be created automatically to help you manage your submission. You can access your account and submission using the credentials you set during the submission process: <https://iphyc.org/login>. Please verify that your solution has uploaded correctly.

We also ask participants to ensure that their name, school, city, and date of birth are entered accurately during registration, as this information will be used for all certificates.

Announcement of Results

Qualification Round results will be announced on Monday, 16 February 2026. Participants will be notified via email and through their online participant accounts. Performance reports and certificates will also be available through the participant account at: <https://iphyc.org/login>.

4.2 Semi-Final Round

Participants who successfully complete the Qualification Round are invited to the Semi-Final Round, which features more challenging and engaging problems. At IPHyC, each round is designed as part of a continuous learning experience, therefore, participants can expect concepts from the Qualification Round to reappear and be applied in new ways to problems in the Semi-Final Round.

This round consists of five problems, each varying in topic, difficulty, and points:

- 2 Foundational Problems (4 points each): Building on core physics concepts and fundamental principles.
- 2 Advanced Problems (6 points each): Addressing more complex scenarios involving advanced topics such as quantum mechanics, relativity, statistical mechanics, electromagnetic theory, or advanced mechanics.
- 1 Research Problem (8 points each): Involving engagement with current topics in physics, drawn from recent research papers in areas such as condensed matter physics, particle physics, astrophysics, or quantum technologies. Participants are expected to understand concepts described in these papers and answer related analytical questions. This offers direct exposure to current scientific work.

The maximum score is 28 points. To qualify for the Final Round, participants must score at least 12 points (Junior), 15 points (Youth), or 18 points (Senior). Remember that clearly outlining your solution steps is crucial for all problems and contributes significantly to your score.

Process and Exam

The Semi-Final Round begins on **Friday, 13 March 2026** with the release of the research paper for preparation. You then have from **Sunday, 15 March 2026** until **Tuesday, 17 March 2026** to take the 60-minute exam at any point during this period. The exam must be supervised either by a teacher (recommended) or by IPhyC using an online supervision system.

You will take the exam via a dedicated online exam platform (<https://iphyc.org/exam>) on a computer, laptop, or phone. During the exam, you write your solutions on paper and scan them afterwards. The research paper will be available in the exam interface. For detailed information about supervision options and the exam process, qualified participants will receive a comprehensive Semi-Final Round information document.

Registration and Costs

If you succeed in the Qualification Round, you can choose to participate in the Semi-Final Round by registering from your participant account.

Semi-Final Round Registration Deadline

The registration deadline for the Semi-Final round is Tuesday, 10 March 2026.

This educational opportunity comes with diverse costs, including those for human resources, technical infrastructure, materials and more. While our sponsors cover some of these expenses, we need to ask participants to cover this year's Semi-Final Round registration costs of 12 EUR to make IPhyC on a global level possible.

The registration costs are necessary to provide the resources required to run a competition at this scale, including evaluation, in particular, for the comprehensive Semi-Final Round. There are no other costs involved. The registration costs can be covered with any common payment method available and we will inform all qualified participants about further details. You can find detailed information about the registration costs here: [Registration Costs Flyer 2025](#)

Can I participate only in the Qualification Round?

Yes, you can participate solely in the Qualification Round and receive your certificate. However, you would not proceed to the subsequent rounds or be eligible for finalist awards.

4.3 Final Round

Participants who excel in the Semi-Final Round qualify for the Final Round: a fast-paced online exam consisting of 20 multiple-choice questions.

The exam covers a range of physics topics, drawing from concepts explored in the Qualification and Semi-Final Rounds. You will have 60 seconds to answer each question. Each question has four possible answers, with only one being correct. A correct answer earns 1 point, and there is no penalty for incorrect answers.

Final rankings, awards, and prizes are primarily determined by the Final Round score. In case of ties, scores from the Semi-Final (and potentially Qualification) Round will be used as tie-breakers.

Final Round Date

All Final Round exams will take place on Tuesday, 14 April 2026.

Final Round Supervision

Finalists take the exam through a secure online portal: <https://iphyc.org/exam>. The exam should be supervised by a teacher at the participant's school. Finalists must nominate a teacher who agrees to oversee the 20-minute exam session. All necessary instructions and guidelines will be provided directly to the supervising teacher.

The supervising teacher is responsible for ensuring academic integrity by confirming that the finalist does not access any unauthorized materials, websites, or applications during the exam. Alternatively, participants may choose to self-record their session. This would require capturing both screen and webcam activity according to provided guidelines during the entire exam, and uploading the recording for verification. This option does not require a teacher supervisor.

Result Announcement

The final results of the competition, including winners and honors, will be announced on Monday, 20 April 2026.

4.4 Timetable and Deadlines

Please find the key dates for IPhYC below. Note that all deadlines are at 23:59 UTC+0. While unlikely, dates are subject to minor adjustments if necessary.

Qualification Round

Sunday, 1 February 2026	Submission Deadline
Monday, 16 February 2026	Announcement of Results

Semi-Final Round

Tuesday, 10 March 2026	Registration Deadline
Friday, 13 March 2026	Release of Problems
Tuesday, 17 March 2026	Submission Deadline
Monday, 30 March 2026	Announcement of Results

Final Round

Tuesday, 14 April 2026	Day of the Final Round Exam
Monday, 20 April 2026	Announcement of Results

5 Information for Teachers and Schools

Teachers, schools, and parents are encouraged to share IPHyC as an extracurricular learning opportunity for students interested in, or simply curious about, physics and scientific problem-solving. The primary objective of IPHyC is to motivate students to interact with physics and related scientific subjects, and to offer a platform for talented individuals to demonstrate and further develop their analytical and problem-solving skills. We provide dedicated tools and resources to help teachers integrate the competition into classroom settings and support their students throughout the process.

5.1 Special School Awards

We recognize the vital role of schools and educators by offering special awards to institutions with high participation rates and exceptional student performance throughout the competition. These awards highlight a strong commitment to fostering talent in physics (see Section 3.3 for details).

5.2 Teacher Login and Resources

We invite teachers to register for access to the dedicated IPHyC Teacher Portal (<https://iphyc.org/teacher-login>). This platform provides tools to:

- Track students' progress, view results, and download certificates.
- Oversee the supervision process for Final Round participants.
- Coordinate group registration payments for the Semi-Final Round, if needed.

Register as a teacher here: <https://iphyc.org/teacher-registration>

If you are interested in establishing an IPHyC or physics club at your school, integrating IPHyC problems into your curriculum, or need promotional materials like flyers and posters, please visit our website or contact us.

6 Representative Program

As a global competition, IPHyC depends on passionate representatives to reach students across schools, cities, and countries. Representatives act as local ambassadors, promoting IPHyC, helping organize activities, and fostering a community centered around physics. This role provides an excellent opportunity to develop leadership and communication skills, enhance your CV or résumé, and experience the fulfillment of inspiring others to explore physics and science.

6.1 Requirements

Applicants must be at least 14 years old, have a genuine interest in physics and science, and be willing to invest time in promoting IPHyC and related activities within their community. Please note: Representative certificates are awarded to those who actively contribute, linked to engaging at least one participant in the Semi-Final Round.

6.2 Responsibilities and Benefits

Representatives take on a range of meaningful tasks, including:

- Encouraging students and youth to participate in IPHyC.
- Informing schools, technology clubs, and local organizations about the competition.
- Optionally organizing local events, workshops, or study groups related to physics.
- Serving as a local point of contact and representative of IPHyC.

Benefits of becoming an IPHyC Representative include operating under the IPHyC name, gaining valuable organizational experience, and making a tangible impact in your community. Official representatives receive access to a personal management page, and an optional IPHyC email address.

Possible representative activities include:

- Using social media to share IPHyC updates and physics content.
- Presenting IPHyC to teachers, school administrators, or student clubs.
- Starting or supporting after-school physics clubs or science interest groups.
- Organizing info sessions, physics workshops, or problem-solving practice groups.

6.3 Special Awards for Representatives

Each year, we recognize outstanding representatives for their dedication and impact. These awards highlight individuals who have gone above and beyond in encouraging participation and organizing meaningful activities to promote physics engagement (see Section 3.2 for details). While recognition is appreciated, your primary motivation should be the desire to inspire others.

6.4 Application Process

To become an official IPHyC Representative, applicants must complete the online application form. The selection process consists of two stages. In the first stage, applicants submit a CV or résumé along with a brief statement outlining their motivation and plans for promoting IPHyC in their region. In the second stage, shortlisted candidates complete a short problem sheet and submit a motivational video of approximately five minutes. All applications are reviewed by the IPHyC coordination team.

Apply here: <https://iphyc.org/application>

7 Further Information

7.1 Submission Status Page

All registered participants receive access to a personal online account. Use this portal to manage your submissions, check your results, view performance reports, and download your certificates. Access your account here: <https://iphyc.org/status>

7.2 Further Materials and Documents

Visit our official website for additional resources that can be used to promote the International Physics Competition. Available materials typically include:

- Information Flyers (like this one)
- IPHyC Posters (Digital/Printable)
- Official IPHyC Logos and Brand Assets

7.3 Newsletter and Notifications

Subscribe to IPHyC notifications on our website to stay updated on competition deadlines, upcoming events, relevant physics opportunities, and other important announcements.

7.4 Social Media Page

Follow us on social media for the latest updates, announcements, and engaging content related to IPHyC and physics education. Help us grow the community by sharing our posts and inviting others to join!

Find us at: www.facebook.com/iphyccompetition

And Instagram: www.instagram.com/theiphyc

7.5 Contact and Questions

If you have questions, feedback, or experience any issues related to IPHyC, please first consult our online FAQ section or contact your regional IPHyC representative, if available (a list is provided on our website). You can also reach out to the central IPHyC team via email. We will respond as soon as possible: info@iphyc.org

7.6 Organizers and Partners

The International Physics Competition is an independent initiative led by a dedicated team committed to advancing physics education. Meet the full team online: <https://iphyc.org/team>.

The main coordinators for this year's competition are:

- Program Coordinator: Dr. Rami Aly, coordinator@iphyc.org
- Team Coordinator: Fabian Schneider, team@iphyc.org
- Outreach Coordinator: Stefan Amberg, outreach@iphyc.org

We extend our sincere thanks to all coordinators, volunteers, and partners whose dedication makes the International Physics Competition possible for students around the world.