Report on the 2025 Leo Szilard Physics Competition





The Tolna County Section of the Lorand Eötvös Physics Society has been organizing a Tolna-county competition named after Leo Szilard since 1994. At the suggestion of Professor György Marx, in 1998, on the 100th anniversary of Leo Szilard's birth, **a *national* physics competition was organized** on the model of this competition, called the **National Leo Szilard Physics Competition**. The competition was such a success that it has been organized every year since then. The topic of the competition was nuclear physics, which was soon expanded to include all of modern physics.

The main sponsors are currently the Ministry of Culture and Innovation and the National Talent Program. This is supplemented by other sources, such as the support of the Paks Nuclear Power Plant. **The competition is organized and managed by the Hungarian Nuclear Society.**



Students can apply for the competition in two categories. In the **Senior category**, high school 11th-12th grade students (typically 17-18 years old), while in the **Junior category** 8th-10th graders of primary and secondary school students can apply. All Hungarian speaking students within the borders of Hungary and abroad can apply for the competition in the appropriate category for their age group. The language of the competition is Hungarian.

The chairman of the competition committee is appointed by the Hungarian Nuclear Society. Members of the committee are invited by the chairman and selected from among current or former lecturers, research physicists, former competitors, and current or former physics teachers of secondary schools.

The competition has two rounds. The first round takes place in the schools, in the form of written essays of 3 hours duration. The physics teacher corrects the papers using the

correction guide provided by the competition committee, and then sends the papers exceeding the appropriate score to the competition committee.

The competition committee invites 20 students from the Senior category and 10 students from the Junior category to the second round, the final, which is traditionally held in April of each year, at the Technical College of Energy in Paks. This year the final was held between 25 and 27 April.



Measurements with a Michelson interferometer

The final consists of solving theoretical problems, performing measurement and computer tasks, which are evaluated by the competition committee. Score weights of the three tasks are 50-25-25%. Competitors have 3 hours to solve the theoretical problems, while 1.5 and 1.5 hours to solve the measurement and computer simulation tasks. Only the points achieved in the second round are included in the final result.

The measurement task this year was the refractive index measurement that could be performed with a Michelson interferometer and the estimation of the coherence length of the laser-diode used as a light source. The simulation task was to optimize the performance of a tokamak-based fusion power reactor.

The special feature of this year's final was that **Nobel prize laureate Hungarian physics professor Dr. Ferenc Krausz also participated**, who was very satisfied with the competition and the competitors' performance.

At the competition, we not only evaluate and reward the results of the students, but also the teachers who prepare them. The Leo Szilard Teacher's Dolphin Award was established in the spring of 2001 by the board of the Leo Szilard Talent Care Foundation for high school physics teachers, who have achieved outstanding results in the field of nuclear education and the spread of nuclear culture.



György Marx Wandering Award

The György Marx Wandering Award was founded in the spring of 2003 by the Competition Committee of the National Leo Szilard Physics Competition, the Leo Szilard Talent Care Foundation and the Lorand Eötvös Physics Society. The Wandering Prize is given to the school whose students participate in the National Leo Szilard Physics Competition and achieve the best result in the final.