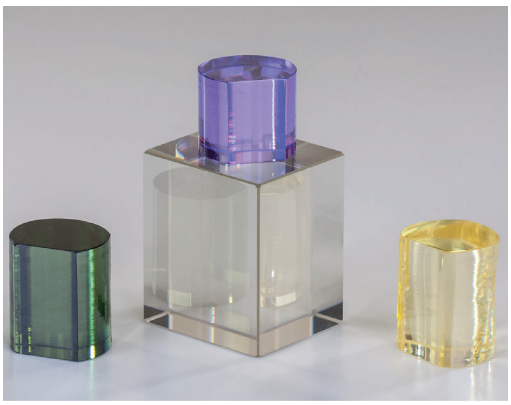
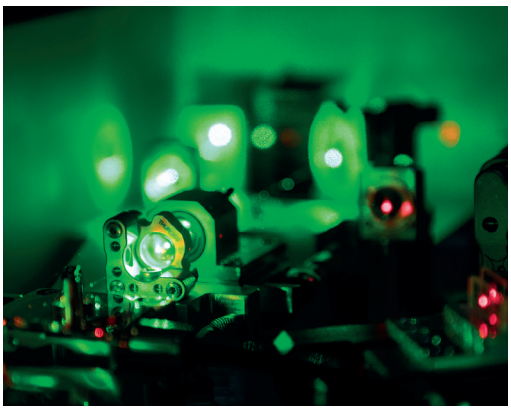
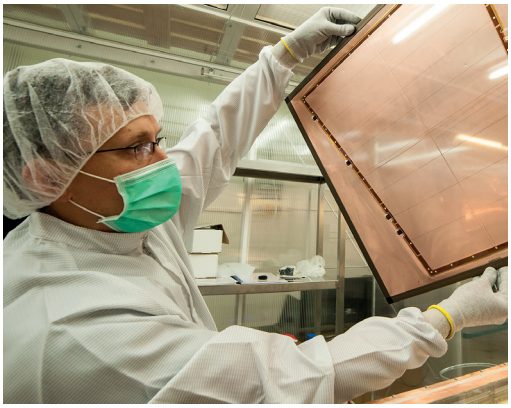
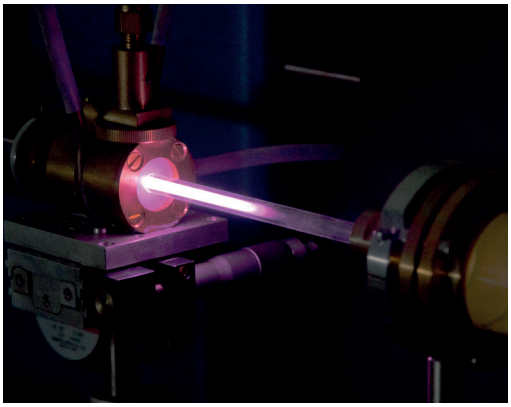




All colors of Physics

Wigner Research Centre for Physics

The Wigner Research Centre for Physics conducts both high level theoretical and exploratory experimental physics research. The majority of our staff, in addition to working at domestic research facilities, also joins a number of international projects, often coordinating Hungary's participation in these.

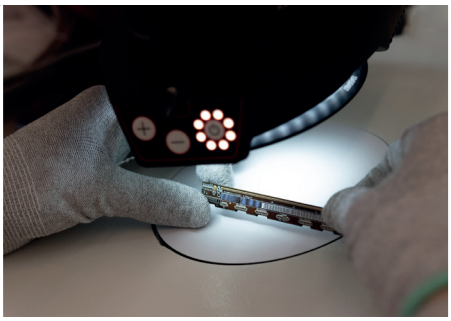
Our research centre unites two institutes: the Institute for Particle and Nuclear Physics and the Institute for Solid State Physics and Optics. Their scientific staff explore the most diverse problems in the world, from studying the tiniest particles to the physics of outer space. The Wigner Research Centre for Physics has been a member of the Eötvös Loránd Research Network since September 2019 and is a Research Centre of Excellence of the Hungarian Academy of Sciences.

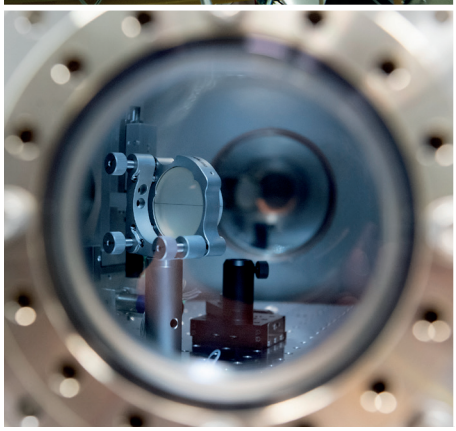
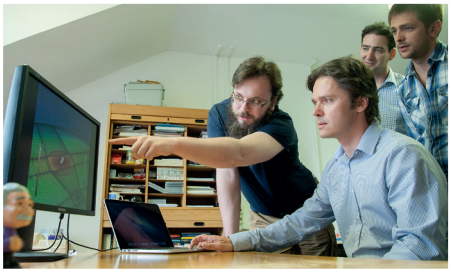
wigner

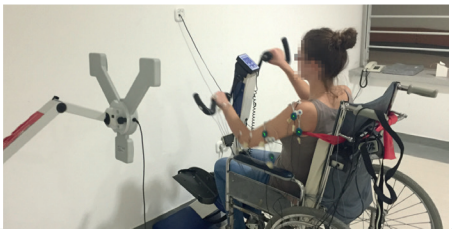
Institute for Particle and Nuclear Physics

- Theoretical nuclear physics, particle physics, theory of relativity, gravitational physics
- Experimental particle physics and relativistic heavy ion physics
- Materials science research
- Space physics
- Computational sciences

Currently the Institute for Particle and Nuclear Physics conducts effective experimental and theoretical research in particle physics, nuclear physics, gravity, space physics, nuclear solid state physics and materials science, and computational sciences. In addition to research, the institute also runs and develops various types of large equipment and its staff also join a number of international projects, at times coordinating Hungary's participation in these. Development activities focus on a number of different areas, such as laser physics, nuclear analytics, high speed data processing, spectroscopy methods, special needs equipment for electronics, mechanics and data technology and neurorehabilitation tools and other special software.

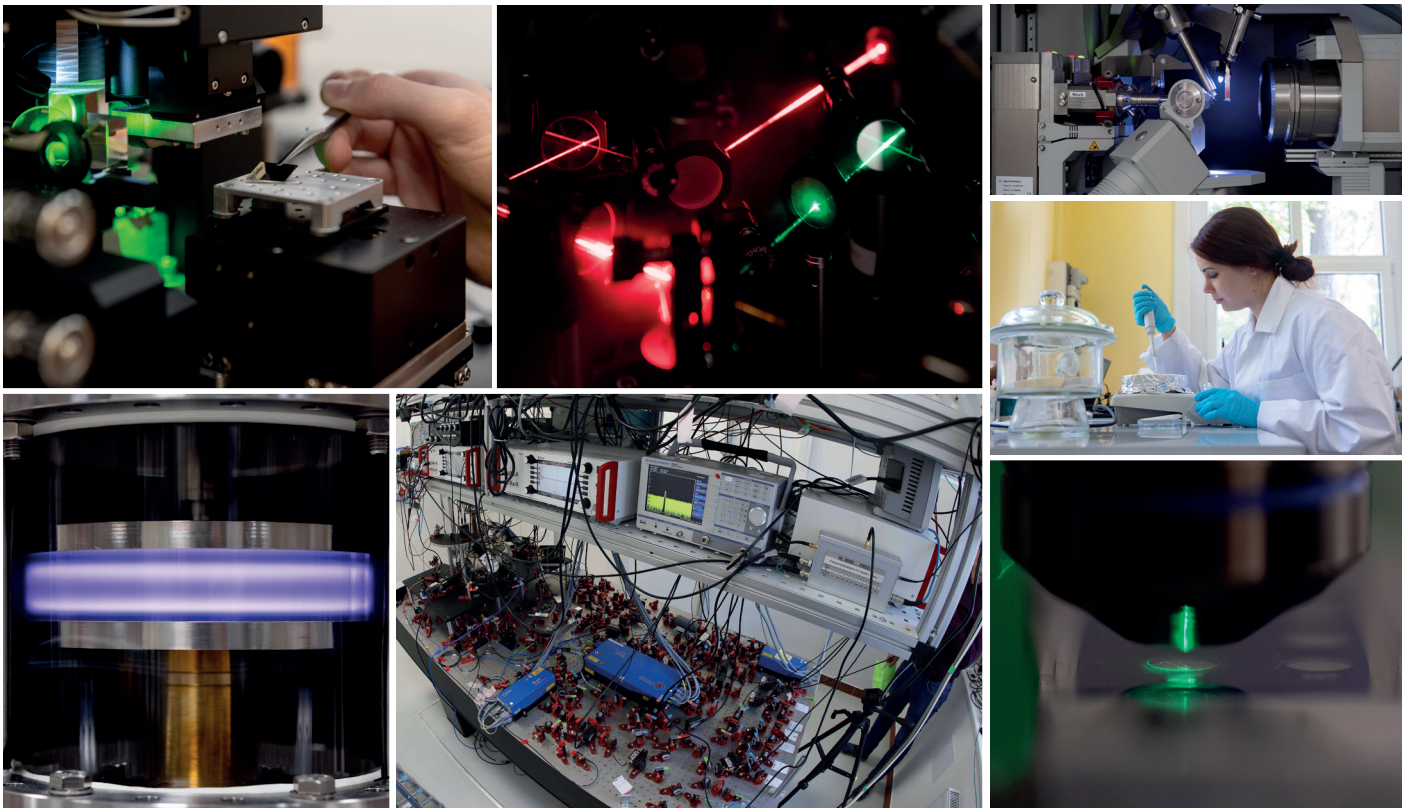


The history of the two institutes goes back to 1950, when they were both part of the Central Research Institute for Physics (KFKI) founded in that year. Over the decades, the professional foundations of our research centre were laid down by renowned scientists like Lajos Jánossy, who founded research in cosmic rays and Károly Simonyi, who founded research in nuclear physics. Then, on 1 January 2012, the two institutes were united to form the Wigner Research Centre for Physics which was, at the time, an institution of the Hungarian Academy of Sciences.

Institute for Solid State Physics and Optics

- Theoretical solid state physics, condensed materials, semiconductor nanostructures
- Experimental solid state physics, structural research
- Complex fluid research, fluid structure, gas discharge, electrolytic nanostructures
- Applied optics research, ultrafast science
- Quantum optics and quantum information

The Institute for Solid State Physics and Optics focuses on the fields of quantum optics and laser applications, and atomic level material structure testing. „Table top" experiments, which can be conducted in local labs, constitute the main profile of the institute. In close relation to these, basic theoretical research is conducted, in particular, high performance computational simulations based on modern numerical methods. The institute's priority topics are quantum information science, nonlinear optical spectroscopy, biomedical applications of laser, new materials production and analysis, developing the spectroscopic methods of material analysis from the infrared range to X-rays and free electron lasers. The research results obtained at the institute are used in numerous fields, from environmental protection to medical science to the pharmaceutical industry.



The KFKI and its successors have always played a key role in basic physics research in Hungary but they progressively provided more and more leeway to high technology applied research as well. For example, it was at the RMKI that the on-board camera of the VEGA spacecraft was developed, and world-class detectors that can be applied in a number of fields are also being developed here. SZFKI was involved in developing the basic theory of attosecond lasers, as well as the method for X-ray tomography for the analysis of crystal structures.

Open laboratories are an important part of our research infrastructure. Their aim is to make certain measurement technologies and measuring devices of the Wigner Research Centre for Physics available to external researchers as well.

Starting from 2013, Wigner RCP has been the home of the Wigner Datacenter, which strives to satisfy the ever changing needs of Hungarian research and development by running a modern IT background infrastructure. High-security data centres following a sustainable model will undoubtedly be the corner stones of the European research IT infrastructure in the upcoming decade. The physical and IT security of the Wigner Datacenter accessible at the Csillebérc Science Campus is internationally outstanding. The Datacenter provides research projects with exceptionally high availability and quality of service.

In addition to our research activity, we consider the training of future generations and public information campaigns an important task. Our scientific staff hold lectures and seminars in a number of universities and supervise BSc, MSc and Phd students. We organise several public information campaigns a year, with a variety of programmes from lab visits to the science café. Throughout our work, we strive to follow the ideals of our eponym, the Nobel-prize winner physicist Jenő Wigner, as his thoughts projected the image of a modern scientific institute ahead of his time.

"If science is expected to grow so great, both in the comprehensiveness of its subject and also in depth, that the human mind will not be able to embrace it, that the life span of man will not be long enough to penetrate to its fringes in time to enlarge it, could several people not form a team and accomplish jointly what no single person can accomplish? Instead of returning with Shaw to Methuselah, can we find a new way to enlarge the capacity of human intellect by the juxtaposition of several individual intellects rather than by extending a single one?"

E.P. Wigner: The Limits of Science, 1950