- **Located in Budapest**
- **Founded in 1950**
- **Member of Eötvös Loránd Research Network**
- **Hungarian Academy of Sciences Centre of Excellence**
- **Institutional memberships in 10 international organizations**
- **368 employees of which 204 researchers**
- **850 publications (2019)**
- **37833 citations (2018)**
- **Impact Factor: 2982,4**

The **Wigner Research Centre for Physics** is open to further joint research activities at national and international level.

For any further information on possible international cooperation please contact Mr. Gergely Gábor BARNAFÖLDI PhD

The Wigner Research Centre for Physics owns a very reach history. Its predecessor institute was founded in 1950 on the KFKI scientific campus, which is located at the border of Budapest, in a beautiful forest environment of the Buda hills. The campus hosts institutes devoted to basic and applied research, ranging from elementary particle physics to material science and their applications hosted in spin-off companies. Large scale facilities, including nuclear reactor and datacenter, several cutting-edge research laboratories and basic infrastructure, such as mechanical and electronic workshops, support the research activity to be sustained at the forefront of the international level. Besides carrying out widely recognized research activities in local groups, Wigner RCP participates in large international scientific collaborations. Researchers continuously contribute to the deep understanding of Nature at the ultimate scale of elementary particles or the detection of gravitational waves born at cosmic scales. Wigner RCP is the major representative of Hungarian institutes in many important international collaborations. Wigner RCP is one of the largest institutes of Eötvös Loránd Research Network, and is a Center of Excellence of Hungarian Academy of Sciences.

Today the Centre consists of two main institutes:

- Institute for Particle and Nuclear Physics
- Institute for Solid State Physics and Optics

In the Institute for Particle and Nuclear Physics researchers explore the features of the known elementary interactions and extreme states of matter; search for unknown particles and fields; develop innovative solutions for novel accelerators and particle detectors; apply radioactive nuclear methods in material science creating functional materials for

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special and daily use; construct space probes and study space weather in the Sun system including Mercure, Jupiter and Saturnus. Since no modern science exists without high-tech information technology, then methods in machine learning and artificial intelligence are developed and applied from brain research to quantumcomputing, where new discoveries are waiting for the curious human beings.

In the Institute for Solid State Physics and Optics, research on advanced and complex materials resulted in new methods upgrading basic x-ray techniques, in the synthesis of novel carbon based materials, and in significant progress in the ability of designing complex systems by means of the efficient modern tools of computational material science. In photonics, measurement methods based on femtosecond laser pulses have been significantly developed and applied in a variety of fields ranging from opto-electronics to biomedical optics. Quantum physics and quantum technology are focus topics, where world-leading position is held in ab initio characterisation of solid-state defect quantum bits, and in dissipative quantum many-body systems such as ultra-cold atomic gases.

Human resources data (researchers and other employees):

In Wigner Research Centre for Physics the average number of employees was 368 in 2019, of which the number of researchers was 204. 14% of the researchers were women. 5 researchers were Full or Corresponding Members of the Hungarian Academy of Sciences, 36 scientists held the title of Doctor of the Hungarian Academy of Sciences, and 118 co-workers had a PhD or were candidates. The rate of young researchers (under 35) was 30%.

Institutional membership in international organisations:

- Hungarian coordinator institute for CERN, XFEL, GSI-FAIR, VIRGO, ECT*, IPPOG
- Participate in ESA, EUROFUSION and RHIC projects, construct ESS, EUPRAXIA, ET, HIAF
- Member of Mössbauer and Psi-K Network

"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

List of the main achievements of Wigner Research Centre for Physics in 2019:

- Method for detecting causal relationships between time-dependent processes by mathematical processing of data from brain electrodes
- Portable equipment for detecting muons from the cosmos
- Quantum crystal in carbon nanotube
- Identification of quantum bits in silicon carbide and their utilization

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