



ELKH | Eötvös Loránd
Research Network

2020



HUNGARY

ELKH

Eötvös Loránd
Research Network

Who we are

Building the future –
driven by heritage

The **Eötvös Loránd Research Network (ELKH) Secretariat** is an independent nonprofit public budgetary organization established on August 1, 2019. The ELKH Secretariat is under the supervision of the National Assembly, led by a 13-member independent Governing Body devoted exclusively to scientific research excellence while safeguarding academic freedom. The function of the Governing Body is supported by a Scientific Council and an International Advisory Board.

The **ELKH Secretariat** maintains the expansive research network funded from the central budget for purposes of carrying out scientific research.

The **ELKH Secretariat** builds on the rich legacy of Eötvös Loránd in articulating the multifaceted character of the collective wealth of knowledge accumulated in the research network over several decades.



In 1891, Eötvös Loránd and his colleagues founded the Hungarian Society for Mathematics and Physics

The newly formed organization was named after **Eötvös Loránd** (Baron Roland von Eötvös) (1848-1919) the preeminent Hungarian researcher and multidisciplinary scientist; physicist, geophysicist. He was the founding father of modern Hungarian science and research development policy who established conditions for the development of university-based innovations and technical education.

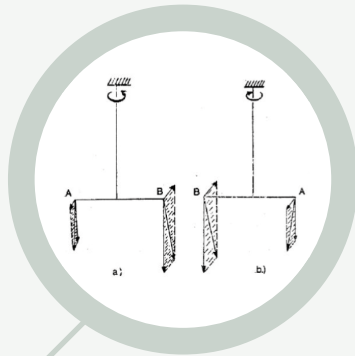
Eötvös Loránd is commemorated for his work on gravitation, his study of the equivalence of gravitational and inertial mass; the gravitational gradient on the Earth's surface; the surface tension of liquids, and the invention of the highly accurate torsion balance or Eötvös pendulum for gravimetry.

“So, finally, we must be rest assured that science does not give the true explanation of natural phenomena, but only leads to the border where the elusive begins.”

Eötvös, 1877

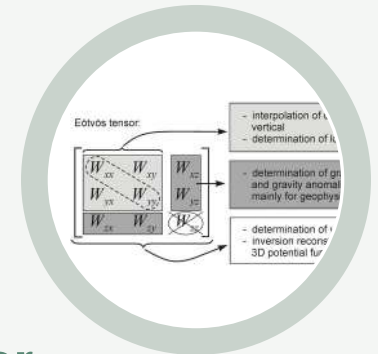
Eötvös unit

a unit for expressing horizontal gradients of gravity (geophysical prospecting) equal to 10^{-9} gal per horizontal centimeter. The symbol of the eötvös unit is E.



Eötvös parameter

is used to quantify a deviation from the Weak Equivalence Principle of two test bodies with different compositions (A and B), inertial mass m_i and gravitational mass m_g . The term is derived from the acclaimed Eötvös experiment



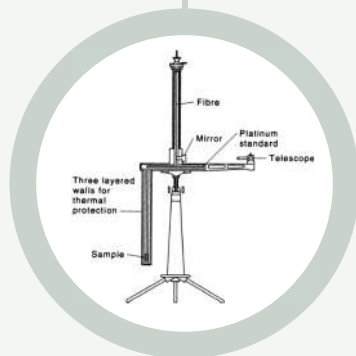
Eötvös-tensor

(gravity gradient tensor) measures the rate of change of the gravity vector in three perpendicular directions

Eötvös rule

or Law (capillarity) for the temperature dependence of a surface tension, where k is the Eötvös constant

$$\left(\frac{M}{d}\right)^{\frac{2}{3}} \gamma = k(t_c - t - 6)$$



Eötvös torsion balance

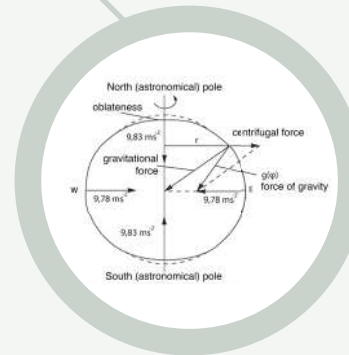
The device measures the direction of force of gravity and the change in the force of gravity's extent in the horizontal plane

Eötvös effect

is the change in perceived gravitational force caused by the change in centrifugal force resulting from eastbound or westbound velocity

Eötvös number

or Bond number characterizes the ratio of gravitational forces to the surface forces



Mission & Vision

Science is at the heart of our policy process

ELKH's vision

To endow ELKH as a forthcoming network of 'think tanks' for policymakers, addressing sustainable transformation while contributing to Hungary's prosperity.

ELKH's mission

- to acknowledge, foster and protect scientific freedom and promote research ethics and research integrity
- to strive for scientific excellence in basic and applied research in natural and life sciences, social sciences, and the humanities
- to efficiently operate the publicly funded research institute network with diversity, inclusivity and by equal opportunity
- to be at the forefront of scientific innovation that generates impact in key strategic and global sustainable areas
- to develop innovative and targeted research programs and policy
- to foster and advance partnerships internationally and regionally
- to strengthen synergies between education and research
- to evolve as a progressive, open and inspiring organization

Key Facts

ELKH | Eötvös Loránd Research Network

16

Main Research
Network

10 Research Centre(s)
5 Research Institutes
1 Office

39

Research
Institutes

Research Institutes
correlating to the
10 Research Centre(s)

150+

Research
Groups

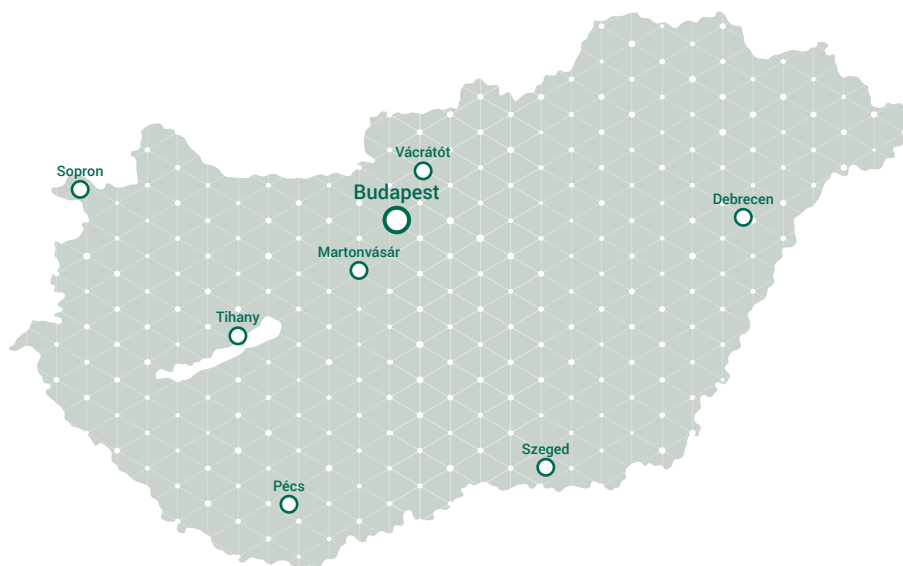
Research Groups affiliated
with Universities or Public
Institutions

- **220** patents
- **7 841** Scientific and Educational publications (2019)
- **19** Spin-offs
- **142** ongoing HORIZON 2020 Grants Awarded
- **57.71 M €** Annual Turnover (est. in 2020)
- **65-110** Employees at the ELKH Secretariat
- **4 872** Employees (3 033 Scientific Researchers) (2019)

What we do

Research for the challenges of our time

- Strengthening capacity, efficiency and linkages
- Interdisciplinary, international collaborations and projects
- Utilization of research results
- Facilitate scientific career building and future challenges of mobility for young researchers
- Effective R+I readiness for future crisis management – *in line with sustainable green recovery (EU Green Deal)*



5 Research Institutes & 1 Office

Institute for Nuclear Research (ATOMKI)	Debrecen
Institute of Experimental Medicine (KOKI)	Budapest
Research Institute for Linguistics (NYTI)	Budapest
Alfréd Rényi Institute of Mathematics (RI)	Budapest
Institute for Computer Science & Control (SZTAKI)	Budapest
Office for Research Groups Attached to Universities and Other Institutions (TKI)	Budapest

10 Research Centre(s) & 39 Research Institutes

Centre for Agricultural Research (ATK)

Martonvásár / Budapest

Institute for Veterinary Medical Research
Agricultural Institute
Plant Protection Institute
Institute for Soil Science and Agricultural Chemistry

Research Centre for the Humanities (BTK)

Budapest

Institute of Philosophy
Institute for Literary Studies
Institute of Art History
Institute of Ethnology
Institute of Archaeology
Institute of History
Institute of Musicology

Research Centre for Astronomy & Earth Sciences (CSFK)

Sopron / Budapest

Geographical Institute of Research
Institute for Geological and Geochemical Research
Geodetic and Geophysical Institute
Konkoly Thege Miklós Astronomical Institute

Centre for Energy Research (EK)

Budapest

Institute for Atomic Energy Research
Institute for Energy Security and Environmental Safety
Institute for Technical Physics and Materials Science

Centre for Economic & Regional Studies (KRTK)

Budapest / Pécs

Institute for Economics
Institute for Regional Studies
Institute of World Economics

Centre for Ecological Research (ÖK)

Tihany / Vácraátót / Budapest

Balaton Limnological Institute
Danube Research Institute
Institute of Ecology and Botany
Institute of Evolution

Biological Research Centre (SZBK)

Szeged

Institute of Biophysics
Institute of Biochemistry
Institute of Genetics
Institute of Plant Biology

Centre for Social Sciences (TK)

Budapest

Institute for Legal Studies
Institute for Minority Studies
Institute for Political Science
Institute for Sociology

Research Centre for Natural Sciences (TTK)

Budapest

Institute of Materials and Environmental Chemistry
Institute of Enzymology
Institute of Cognitive Neuroscience and Psychology
Institute of Organic Chemistry
Brain Imaging Center

Wigner Research Centre for Physics (WIGNER FK)

Budapest

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



Mathematics & Natural Sciences

Natural Sciences: Mathematics; Computer and Information Sciences (AI, AV); Physical Sciences (Physics, Chemistry); Astronomy and Earth Sciences; Nuclear Physics and Atomic Energy Sciences; Materials Sciences; Biological Sciences; Biochemistry and Enzymology

Life Sciences

Environmental and Life Sciences: (Limnology, Ecology, Botany, Zoology, Virology); Agriculture Sciences (Chemistry); Plant Sciences; Soil Sciences; Crop Sciences; Atmospheric Sciences; Geo Sciences; Animal Sciences; Veterinary Sciences (Emerging Zoonotic Diseases)

Medical and Health Sciences:

Cognitive Science; Neuroscience; Pharmacology; Experimental Medicine; Veterinary Medicine; Biomedical Sciences; Medical Genetics; Nanotechnology; Biomedical; Telemedicine; Microbiology

Social Sciences & the Humanities

Social Sciences: Economics; Philosophy; Sociology, Law; Political Sciences; Literary Studies; Art History; Ethnology; Archaeology; History, Musicology; Linguistics



**Environment
(Sustainability) & Safety**



Materials & Energy



Human Health



Human Resources



Industry & Digitalization

HEALTH-RELATED DRUG RESEARCH AND DEVELOPMENT; MOLECULAR BIOLOGY; NEUROBIOLOGY; PSYCHOLOGY; ECOLOGY; CLIMATE CHANGE; AGRICULTURE; WASTE MANAGEMENT; ECONOMICS; HISTORY; THE HUMANITIES; LANGUAGE; ADVANCED STRUCTURAL MATERIALS; ENERGY; SPACE; QUANTUM SCIENCE AND NANOTECHNOLOGIES; DIGITALIZATION OF MANAGEMENT PROCESSES; MATHEMATICS; AI; MACHINE LEARNING; BIG DATA ANALYTICS; INTELLIGENT SYSTEMS; AVIATION INNOVATION AND HYDROGEN

Impact

International Rankings

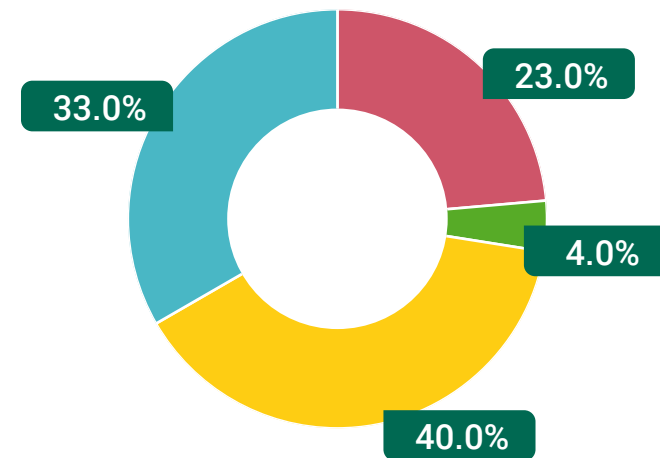
1 April, 2019 – 31 March, 2020

- Placed 395th in 2019
- Hungarian Academy of Sciences (HAS);
Eötvös Loránd Research Network (ELKH)

Region: Global	Count	Share
Subject/Journal group: all	296	38.01

Subject	Count	Share
● Chemistry	51	9.66
● Physical Sciences	189	13.76
● Earth & Environmental Sciences	14	1.46
● Life Sciences	66	16.45

Outputs by subject (Share)



source: Nature Index



ELKH Secretariat
H-1016 Budapest, Gellérthegy u. 30-32.

www.elkh.org

v1.6