

CV of Zaránd Gergely

Personal data

Name Zaránd Gergely
Position Vice-Rector for Scientific Affairs
Current institution Budapest University of Technology and Economics
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Fax
Date of birth 07/25/1969

Education

2023 Member of Szent István Academy of Sciences
2016 Member of the Hungarian Academy of Sciences
2007 Habilitation (Budapest University of Technology and Economics)
2006 Doctor of the Hungarian Academy of Sciences
1995 Ph.D. in physics, Technical University, Budapest, Hungary
1992 M.S. in Physics, Eötvös Loránd University, Budapest, Hungary

Employment

2024/07-	Vice-Rector for Scientific Affairs	Budapest University of Technology and Economics (BME)
2015-2024	Director	BME Institute of Physics
2012-2015	Vice-director	BME Institute of Physics
2007/09-	Professor	BME
2011/02-2012/02	Visiting Professor	FU Berlin
2005/09-2006/09	Visiting Professor	Universität Karlsruhe (KIT)
2002/07-2007/09	Associate Professor	BME
2003/07-2002/08	Visiting Professor	Argonne National Lab.
2000/09-2002/09	Postdoctoral Researcher	Harvard University
2001/06-2001/07	Visiting Professor	Argonne National Lab.
1999/09-2000/09	Research Fellow	BME
1998/09-1999/09	Postdoctoral Researcher	University of California, Davis
1997/09-1997/12	Postdoctoral Researcher	University of California, Davis
1996/02-1996/04	Postdoctoral Researcher	SISSA, Trieste, Italy
1995/09-1998/09	Assistant Research Fellow	BME
1995/02-1995/05	Visiting Researcher	Institut Laue-Langevin, Grenoble
1992/09-1995/09	PhD Scholar of HAS	BME

Awards and prizes

2023	Szent István Academy, member
2022	Hungarian Academy of Sciences, member
2016	Hungarian Academy of Sciences, corresponding member
2011	DFG Mercator Gastprofessur
2007	Physics Prize of the Hungarian Academy of Sciences
2005	Bessel Award of the Alexander von Humboldt Foundation
2004, 2014	'Teaching Excellence' award, (Faculty of Sciences, BME Budapest)
2003	Talentum Award of the Hungarian Academy of Sciences
1999	Young Scientist Award of the Hungarian Academy of Sciences

Research interest

- Non-equilibrium quantum dynamics, thermalization, quantum quench and dissipation
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- MPS and MPO methods for non-equilibrium systems and nuclear matter
- Correlated quantum glasses
- Correlations and coherence in nanostructures
- Correlations and exotic phases of ultracold atoms
- Strongly correlated systems and quantum criticality
- Ferromagnetic semiconductors, spintronics
- Photovoltaics, multiexciton generation
- Exotic superconductors and heavy fermion systems

Teaching activity

Modern Mathematical Methods in Physics; Mechanics; Statistical Physics; Phase Transitions; Many-body theory; The Physics of Disordered Systems; Theoretical Nanophysics; Classical and Quantum Chaos; Quantum Mechanics; Solid State Physics; Interacting 1D fermions; Scaling and Renormalization in Statistical Physics; Localization Theory; Mesoscopic Physics

Students supervised

- | | | | |
|-------------------------|-----|------|-----------------|
| • Werner, Miklós | PhD | 2020 | FTDI-BME |
| • Lovas, Lia Izabella | PhD | 2018 | FTDI-BME |
| • Kanász-Nagy, Márton | PhD | 2015 | FTDI-BME |
| • Horváth, Bertalan | PhD | 2012 | FTDI-BME |
| • Francois Crepin (50%) | PhD | 2011 | Univ. Paris Sud |
| • Tóth, Anna | PhD | 2009 | FTDI-BME |
| • Rapp, Ákos | PhD | 2008 | FTDI-BME |
| • Borda, László (50%) | PhD | 2001 | FTDI-BME |
| • Greg Fiete | PhD | 2002 | Harvard |
- BEFORE GRADUATION
- | | | | |
|----------------------|-----|------|----------|
| • Szombathy, Dominik | PhD | 2025 | FTDI-BME |
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Memberships and professional service

- Member of the physics jury of the Hungarian National Science Foundation, OTKA (2007-2010, 2015-2018)
- Referee of the Physical Review, Physical Review Letters, Nature, Nature Physics, Solid State Communications, Europhysics Letters
- Member of the Physics Board of the Bolyai Committee of the HAS (2012-2024)
- Member of the American Physical Society
- Head of the Scientific Council, BME (2021-2024)
- Member of the Senate, BME (2020-2021)
- Director of the Institute of Physics, BME (2015-2024)
- Deputy Director of the Institute of Physics, BME (2012-2015)
- Member of the Solid State Physics Committee (2011-) and the Statistical Physics Committee (2016-) of HAS
- Member of the Habilitation Committee and Doctoral Council, Doctoral School of Physical Sciences, BME
- Member of the Habilitation Committee, ELTE/Faculty of Natural Sciences (2010 - 2012)

Grants, fellowships, projects

2023	HUN-REN ‘Welcome Home’ program (Rakovszky Tibor, HUF 100M)
2021-	QuSiEd QuantERA project (HUF 63M)
2021-	Project No. SNN 139581, Dynamics of interacting quantum many-body systems (HUF 67M)
2020-	Quantum Information National Laboratory, BME TTK coordinator (HUF 1.4 billion)
2019-	MTA-BME Quantum Dynamics and Correlations Research Group (HUF 150M)
2017-2021	Hungarian Quantum Technology Project, HunQTech project, PI, coordinator, BME (HUF 1.579 billion)
2016-2021	Hungarian OTKA grant No. SNN 18028, Thermalization in non-equilibrium quantum systems (HUF 31M)
2013-2016	Hungarian OTKA Grant No. K105149 (HUF 17.9M)
2012-2017	Exotic Quantum Phases Group MTA ‘Momentum’ leader (HUF 115M)
2009-1012	EU GEOMDISS network, node coordinator (EUR 181,000)
2008-2011	Hungarian OTKA Grant No. K73361 consortia, PI (HUF 20.7M)
2006-2010	Hungarian OTKA Grant No. NF61726, PI (HUF 30M)
2005-2006	DAAD - MÖB bilateral grant (with Felix von Oppen, Freie Univ. Berlin)
2004-2007	NSF-MTA-OTKA bilateral grant (with B. Jankó, Univ. Notre Dame)
2004-2008	Hungarian OTKA grant No. T046303, Correlations and disorder in mesoscopic and strongly correlated systems (HUF 8.4M)
2003-2006	EU Spintronics RTN Budapest, node coordinator (EUR 136,000)
2002	Bolyai Fellow of the Hungarian Academy of Sciences
2001	Eötvös Fellow of the Hungarian Academy of Sciences
2000-2002	Harvard Postdoctoral Fellowship
2000	NSF-NATO Postdoctoral Fellowship (turned down)
1999	Bolyai Fellow of the Hungarian Academy of Sciences
1999-2003	Hungarian OTKA Grant No. F030041, PI (HUF 4M)

1996-1997 Magyary Fellowship of the Hungarian Ministry of Education
1995-1999 Hungarian OTKA Grant No. F016604, PI (HUF 3M)

Languages

English, German, French

Scientific impact (as of 01/2025)

155 publications in highly ranked international journals, including 2 Nature, 1 Science, 1 Nature Physics, 1 Nature Communications, 41 Physical Review Letters and 77 Physical Review B/A/E/Research publications.

100+ invited talks at prominent research institutions, 50 invited talks at international conferences and schools since 2006; 3912 independent references. H-index: 36.

Five selected publications

- P. Penc, C.P. Moca, Ö. Legeza, T. Prosen, G. Zaránd, and M.A. Werner, *Loss-Induced Quantum Information Jet in an Infinite Temperature Hubbard Chain*, Phys. Rev. Lett. **133**, 190403 (2024)
- A. Tichai, K. Kapás, T. Miyagi, M.A. Werner, Ö. Legeza, A. Schwenk, and G. Zarand, *Spectroscopy of $N = 50$ isotones with the valence-space density matrix renormalization group*, Physics Letters B **855**, 138841 (2024)
- C.P. Moca, I. Weymann, M.A. Werner, G. Zarand, *Kondo Cloud in a Superconductor*, Phys. Rev. Lett. **127**, 186804 (2021)
- C.P. Moca, W. Izumida, B. Dóra, Ö. Legeza, J.K. Asbóth, and G. Zaránd, *Topologically Protected Correlated End Spin Formation in Carbon Nanotubes*, Phys. Rev. Lett. **125**, 056401 (2020)
- I. Shapir, A. Hamo, S. Pecker, C.P. Moca, Ö. Legeza, G. Zarand, S. Ilani, *Imaging the electronic Wigner crystal in one dimension*, Science **364**, 870 (2019)