Curriculum Vitae

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Personal information

Name:	**István RÁCZ**, Prof. Dr.
Permanent address:	Wigner Research Center for Physics
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Nationality:	Hungarian

Education and degrees received

2014	Honorary Professor at Miskolc University
2011	Doctor of the Hungarian Academy of Sciences
1989	Candidate[1] of Physical Sciences, Hungarian Academy of Sciences
1986 - 1989	MTA Central Research Institute for Physics, PhD student
1983	MSc, Diploma in mathematics and physics
1978 - 1983	Lajos Kossuth University, Debrecen

[1] The degree 'Candidate of Physical Sciences' was superior to PhD. Once receiving this degree, PhD was awarded by either of the Hungarian universities possessing a faculty of sciences.

Work experience

2020 -	Wigner Research Center for Physics, research professor
2018 - 2020	Faculty of Physics, University of Warsaw, visiting professor [on leave of absence from Wigner RCP]
2011 - 2018	Wigner Research Center for Physics, scientific adviser
2004 - 2011	MTA KFKI Research Institute for Particle and Nuclear Physics, senior research fellow, head of the general relativity group
1993 - 2004	MTA KFKI Research Institute for Particle and Nuclear Physics, Theoretical Department senior research fellow, between 1994-2002 deputy head of the department
1990 - 1993	MTA Central Research Institute for Physics, Theoretical Department, research fellow
1989 - 1990	MTA Central Research Institute for Physics, Theoretical Department research associate
1986 - 1989	MTA Committee of Scientific Qualifications, PhD student
1983 - 1986	Lajos Batthyány Secondary Grammar School, Nagykanizsa, teaching mathematics and physics

Research Interest

My research interest is in general relativity. Within this, I have worked on quite diverse topics, although they are all rooted in differential geometry, differential topology methods, and PDE techniques. Much of my research has focused on the study of spacetime singularities, spacetime extensions, and the time evolution of nonlinear dynamical systems.

In particular, I have been involved in the study of the asymptotic final states and dynamical properties of black holes. In recent years, my research interest has focused mainly on the study of the Cauchy problem for nonlinear dynamical systems. I have developed and applied radically new techniques for solving the Cauchy problem in general relativity. These include new methods for

treating time evolution in Einstein's theory and for solving constraint equations. I have applied these new techniques to the study of black hole physics and to theoretical issues related to the evolution of various coupled gravitational-material systems.

Fellowships and scientific awards

2018-2020	Research Fellow of the National Science Centre, Poland (POLONEZ program receiving funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 665778)
2013-2014	Szentágothai János Research Fellow, National Excellence Program, Hungary
2006-2007	Research Professor of the 'Japanese Society for the Promotion of Science'
2006	'Scientist of the month' at OTKA (the Hungarian NSF) in April
2003-2006	Bolyai János Research Fellow of the Hungarian Academy of Sciences
1997-1999	Research Fellow of the 'Japanese Society for the Promotion of Science'
1991-1992	Fellow of the Soros Foundation at the University of Chicago
1988	'Honorable Mention' by the Gravity Research Foundation
1987	'Honorable Mention' by the Gravity Research Foundation
1983	Awarded an MSc diploma for excellent students issued by the Lajos Kossuth University

Periods of study and research abroad

2018/01-2019/12	Faculty of Physics, University of Warsaw, Poland, visiting professor, host researcher: Jerzy Lewandowski
2018/11-2018/12	Einstein Institute, Golm, Germany, visiting professor, host researcher: Lars Andersson
2018/06-2018/07	Einstein Institute, Golm, Germany, visiting professor, host researcher: Lars Andersson
2017/12-2017/12	Einstein Institute, Golm, Germany, visiting professor, host researcher: Lars Andersson
2017/10-2017/11	Yau Mathematical Sciences Center, Beijing, China visiting professor, host researcher: Yau, Shing-Tung
2017/06-2017/07	Einstein Institute, Golm, Germany, visiting professor, host researcher: Lars Andersson
2016/03-2016/09	Einstein Institute, Golm, Germany, visiting professor, host researcher: Lars Andersson
2015/11-2015/12	Einstein Institute, Golm, Germany, visiting professor, host researcher: Lars Andersson
2014/10-2014/12	Einstein Institute, Golm, Germany, visiting professor, host researcher: Lars Andersson
2013/09-2013/12	Einstein Institute, Golm, Germany, visiting professor, host researcher: Lars Andersson
2012/06-2012/08	Einstein Institute, Golm, Germany, visiting professor, host researcher: Lars Andersson
2006/11-2007/08	Yukawa Institute, Kyoto, Japan, visiting JSPS professor, host researcher: Hideo Kodama and Misao Sasaki
1997/11-1999/03	Yukawa Institute, Kyoto, Japan, JSPS research fellow, host researcher: Hideo Kodama
1997/03-1997/10	Tokyo Institute of Technology, Tokyo, Japan, JSPS research fellow, host researcher: Akio Hosoya

1996/05-1996/07	Einstein Institute, Potsdam, Germany, visiting researcher, host researcher: Helmut Friedrich
1993/10-1993/12	University of Chicago, Chicago, USA, MTA - NSF collaboration, host researcher: Robert Manuel Wald
1991/09-1992/06	University of Chicago, Chicago, USA, Soros Foundation, host researcher: Robert Manuel Wald

Invitation to workshops

2023	Schrödinger Institute, Vienna, Austria, a workshop on "Mathematical Relativity: Past, Present, Future"
2023	Bad Honnef, Germany, Wilhelm and Else Heraeus Foundation: 781. WE-Heraeus-Seminar on "Time and Clocks"
2019	Institut Mittag-Leffler, Stockholm, Sweden, a workshop on "General Relativity, Geometry and Analysis: beyond the first 100 years after Einstein"
2017	Schrödinger Institute, Vienna, Austria, a workshop on geometry and relativity
2015	Oberwolfach, Germany, a workshop on mathematical relativity
2012	Schrödinger Institute, Vienna, Austria, a workshop on black holes and asymptotics
2011	Schrödinger Institute, Vienna, Austria, a workshop on nonlinear dynamics
2009	Schrödinger Institute, Vienna, Austria, a workshop on nonlinear dynamics
2005	University of Cambridge, a workshop on mathematical relativity
2005	YKIS, Yukawa Institute, Kyoto, Japan, a workshop on general relativity and cosmology
2004	Schrödinger Institute, Vienna, Austria, a workshop on critical phenomenon in GR
2003	Schrödinger Institute, Vienna, Austria, a workshop on mathematical cosmology
2001	Warsaw, Poland, a workshop on canonical and quantum gravity
2001	Tübingen, Germany, a workshop on 'The Conformal Structure of Space-Times'
2000	Oberwolfach, Germany, a workshop on mathematical relativity
1999	University of California, Santa Barbara, USA, a workshop on mathematical relativity
1993	Schrödinger Institute, Vienna, Austria, a workshop on mathematical relativity

Leadership in research programs

Principal research fellow in NCN (Polish NSF) grants

2018 - 2020	Marie Skłodowska-Curie grant agreement No. 665778

Principal research fellow in OTKA (Hungarian NSF) grants

2022 - 2026	NKFIH K-142423
2015 - 2020	NKFIH K-115434
2009 - 2012	OTKA IN-77395
2006 - 2012	OTKA K67942
2001 - 2004	OTKA T034337
1993 - 1996	OTKA F014196

Representative of the Hungarian participants in international collaborations

2013 - 2014	Austrian-Hungarian joint research programme, 87ü16, University of Vienna
2008 - 2014	Member of the Executive Board of the 'Virgo Scientific Collaboration' [2]
2006 - 2014	Member of the Steering Committee of the of the 'Virgo Ego Scientific Forum'
2002 - 2005	NATO Collaborative Linkage Grant, PST.CLG.978726
2000 - 2004	Scientific collaboration supported by the Polish and Hungarian Academy
1995 - 1996	Austrian-Hungarian joint research programme, University of Vienna
1994 - 1996	Scientific collaboration supported by the Polish and Hungarian Academy
1993 - 1995	MTA-NSF joint research programme, University of Chicago

Teaching and lecturing experience

Lecturing at the University of Warsaw, Warsaw, Poland

Monographic lectures for PhD students and postdoctoral fellows

2018/09 - 2019/02 On the use of evolutionary methods in metric theories of gravity, Course ID: 1102-4EMMTG Erasmus code / ISCED: 13.204/ (0533) Physics

Lecturing at Tsinghua University, Beijing, China

An intensive courses for doctoral and postdoc students

2017/10 - 2017/11 On the use of evolutionary methods in spaces of Euclidean signature

Lecturing at Loránd Eötvös University

Special courses

1995 Quantum Field Theory on Curved Spacetimes
1990 Introduction to General Relativity
1989 Introduction to General Relativity

Courses for doctoral students

2011 - 2012 Introduction to General Relativity
2007 - 2008 Introduction to General Relativity
2005 - 2006 Introduction to General Relativity
2004 - 2005 Quantum Field Theory on Curved Spacetimes
2003 - 2004 Introduction to General Relativity

Lecturing at Miskolc University

Special course

2013 - 2014 Lectures on Weak Gravitational Waves in General Relativity

Supervising postgraduate students

Postdocs

2018 -2019 Georgios Doulis

PhD students

2015 - 2021 Károly Csukás (PhD obtained in 2021)
2006 - 2011 Merse Előd Gáspár (PhD obtained in 2012)
1995 - 1998 József Zsigrai (PhD obtained in 1998)
1992 - 1995 János Kánnár (PhD obtained in 1995)

M.Sc students:

2023 - 2025 Viczián Anna
2022 - 2024 Marozsi Ádám
2022 - 2024 Raksányi Dániel
2022 - 2024 Somodi Máté
2011 - 2014 Károly Csukás
2009 - 2011 Gergely Kovács
2009 - 2011 László Gondán
2007 - 2009 Adrián Németh
2005 - 2006 Ádám Rusznyák
1994 - 1995 József Zsigrai
1994 - 1995 István Nikolényi
1992 - 1993 Mária Süveges
1990 - 1991 János Kánnár

B.Sc students:

2021 - 2023 Östör János
2021 - 2022 Marozsi Ádám
2021 - 2022 Raksányi Dániel
2021 - 2022 Somodi Máté
2003 - 2014 Balázs Cziráki

Organizing scientific schools and workshops

2023 Wigner 121 Scientific Symposium, 18-21 September 2023, Budapest
2022 12th Central European Relativity Seminar, 21-23 February 2022, Budapest
2015 5th Central European Relativity Seminar, 26-28 February 2015, Budapest
2013 Wigner 111 Scientific Symposium, 11-14 November 2013, Budapest
2010 3rd annual meeting of the ET design study project, 23-24 November 2010, Budapest
2006 Theoretical Physics School: 'GR and the experiments', Gyöngyöstarján, 28-31 August
2005 Theoretical Physics School: 'QCD Today', Gyöngyöstarján, 23-27 May, 2005
2004 Theoretical Physics School: Cosmology, Gyöngyöstarján, 24-28 May, 2004
2003 Seventh Hungarian Relativity Workshop, Sárospatak, August 10-15, 2003
1993 International school on quantum field theory on curved spacetime, lecturer: R. M. Wald

Memberships in scientific associations

2008 - 2014 member of the executive board of the Virgo Collaboration
2006 - 2014 member of the steering committee of Virgo EGO Scientific Forum
2004 - lifetime member of the International Society for General Relativity and Gravitation
1999 - member of the Roland Eötvös Physical Society,
from 2002 secretary, from 2004 president of the Particle Physics Subdivision
1995 - member of the Physics Division of the Hungarian Academy of Sciences,
between 1996 and 2002 elected representative of the Particle Physics Subdivision
1990 - 1996 member of the American Mathematical Society

Editorial board membership

Entropy, MDPI, Impact Factor: 2.494 https://www.mdpi.com/journal/entropy
Symmetry, MDPI, Impact Factor: 2.645 https://www.mdpi.com/journal/symmetry

Refereeing for scientific journals

General Relativity and Gravitation, Classical and Quantum Gravity, Journal of Physics A: Mathematical and Theoretical, Proceedings of Royal Society A, International Journal of Theoretical Physics, Vietnam Journal of Mathematics, Physics Letters B, The European Physical Journal, Communications in Mathematical Physics