

Curriculum Vitae

May, 2018

Personal information

Name: **István RÁCZ**, Prof. Dr.
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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 Candidate¹ 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 at that time. Once receiving this degree, PhD was automatically awarded by either of the Hungarian universities possessing a faculty of sciences.

Work experience

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, from 1994 till 2002 the 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,
teacher in mathematics and physics

Research Interest

My research has been concerned with a board range of topics in general relativity. They are all related to the application of methods of differential geometry and differential topology. Considerable large part of my research has been focused on spacetime singularities and spacetime extensions, in particular, on the use of related techniques in black hole physics. In the past few years my research also concerned with the Cauchy problem in general relativity, in particular, its use in studying the evolution of various coupled gravity matter systems.

The list of the main areas I have been working on within general relativity, with the publication of research papers—see the link to my publications at <http://www.kfki.hu/~iracz/>—in scientific journals, contains:

- Causal structure of spacetimes
- Causal boundary constructions
- Spacetime singularities
- Extensions of spacetimes
- Equilibrium states of black holes
- Generating new solutions of Einstein's equations from known ones
- Symmetries and their relation to initial value problem
- Numerical relativity
- Time evolution of non-linear dynamical systems

Fellowships and scientific awards

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| 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 | Pass with honor degree of the Lajos Kossuth University |

Periods of study and research abroad

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| 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

- 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

- 2015 - 2018 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’
- Founder and leader of a Hungarian research group at the Virgo Collaboration for the period 2008 - 2014*
- 2006 - 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 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 Weak gravitational waves in general Relativity

Supervising postgraduate students

PhD students

2015 - Károly Csukás

2012 - Máté Ferenc Nagy

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:

2003 - 2014 Balázs Cziráki

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

Organizing scientific schools and workshops

2015 5th Central European Relativity Seminar

2013 Wigner 111 Scientific Symposium

2010 3rd annual meeting of the ET design study project

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 - 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

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