

Curriculum Vitae

September, 2022

Personal information

Name: **István RÁCZ**, Prof. Dr.
Permanent address: Wigner Research Center for Physics
H-1121 Budapest, XII. ker. Konkoly Thege Miklós út 29-33.
Phone: +36 - 1 - 3922 - 222 (extension 36 - 94),
fax: +36 - 1- 3922 - 598
Email: racz.istvan@wigner.hu
Web: <http://www.kfki.hu/~iracz/>
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. 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 focuses on general relativity. Within that, I dealt with quite diverse topics, though they all are rooted in differential geometry and topology methods. Much of my research has focused on studying spacetime singularities, extensions of spacetimes, and dynamical systems.

In particular, I was involved in investigating stationary and dynamic black holes. In recent years, my research interest has mainly been centered on studying dynamical systems. Among other things, I have concentrated on the Cauchy problem of general relativity, the question of gauge selection, and developing and applying completely new methods for solving the time problem and constraint equations. I use these new techniques in studying black hole physics and 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

- 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 - 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’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:

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 - 2022 Marozsi Ádám

2021 - 2022 Raksányi Dániel

2021 - 2022 Somodi Máté

2003 - 2014 Balázs Cziráki

Organizing scientific schools and workshops

- 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