

Curriculum Vitae

Name: **Luciano REZZOLLA**, Prof. Dr.
Office Address: Institute for Theoretical Physics
Max-von-Laue Str. 1,
D-60438 Frankfurt am Main, Germany
Tel. +49-69-79847871 – Fax. +49-69-79847879
email: rezzolla@th.physik.uni-frankfurt
webpage (group): <http://relastro.uni-frankfurt.de>
webpage (personal): <http://astro.uni-frankfurt.de/rezzolla>
Nationality: Italian

Education

1994 – 1997 Ph.D. in Relativistic Astrophysics at SISSA, Trieste, Italy Supervisor: Prof. John C. Miller
1993 – 1994 Served as Officer (Midshipman) in the Technical Corp of the Italian Navy
1991 – 1992 Research work for the Laurea (MSc) Thesis at the Astronomical Observatory, Trieste, Italy
1992 Laurea (MSc) in Physics: 110/110 cum Laude
1989 – 1991 Undergraduate work at the Department of Physics, University of Trieste, Italy
1986 – 1988 Undergraduate work at the Department of Physics, University of Bari, Italy

Employment

2017 – 2021 Director, Institute for Theoretical Physics, Frankfurt am Main
2016 – 2017 Deputy Director, Institute for Theoretical Physics, Frankfurt am Main
2015 – 2019 Senior Fellow at the Frankfurt Institute for Advanced Studies
2013 – Chair of Theoretical Astrophysics, Institute for Theoretical Physics, Frankfurt am Main
2006 – 2014 Head of the Numerical Relativity Group, Albert Einstein Institute
2004 – 2006 Director of the Computing Centre at SISSA, Trieste, Italy
2004 – 2006 Associate Professor in Relativistic Astrophysics at SISSA, Trieste, Italy
2004 – 2013 Adjunct Professor at the Department of Physics and Astronomy
Louisiana State University, Baton Rouge, USA
2000 – 2003 Assistant Professor (Ricercatore) in Relativistic Astrophysics at SISSA, Trieste, Italy
2001 – 2002 Visiting Professor during the summer period at the *Albert Einstein Institute*, Golm, Germany
1999 – 2000 Five-year Senior Research Fellow, Astrophysics Sector at SISSA, Trieste, Italy
1998 – 1999 Postdoctoral Fellowship, Physics Dept., University of Illinois at Urbana (with Prof. F. K. Lamb)
1996 – 1998 Postdoctoral Fellowship, NCSA, University of Illinois at Urbana (with Prof. S. L. Shapiro)
1993 – 1994 Served as Officer (Midshipman) in the Italian Navy. Assigned to the submarine “Gazzana”

Honours and Awards (2004–2019)

- 2021 “Group Achievement Award 2021”, Royal Astronomical Society (shared with EHT)
- 2020 “Bruno Rossi Prize 2020”, American Astronomical Society (shared with EHT)
- 2020 “Niko-Claus Prize for Excellence in Teaching”, Frankfurt, Germany
- 2020 “Albert Einstein Medal 2020”, Einstein Society at Bern (shared with EHT)
- 2019 “Golden Seal”, Bari University, Italy
- 2019 “Outstanding Personality 2019”, Frankfurt am Main City Council, Germany
- 2019 “Breakthrough Prize 2020” in Fundamental Physics (shared with EHT)
- 2019 “The Andrews Professor of Astronomy”, Trinity College Dublin
- 2019 Frankfurt Physics Prize, Frankfurt, Germany
- 2019 “Virtute e Conoscenza” Prize (Virtue and Knowledge), Santo Cesario, Italy
- 2019 “Diamond Achievement Award”, National Science Foundation (shared with EHT)
- 2019 – Member of the Italian Physical Society (SIF)
- 2018 – Member of the European Physical Society (EPS)
- 2017 Karl Schwarzschild Prize, Frankfurt, Germany
- 2017 – Member of the German Astronomical Society (AG)
- 2016 Appointed *Outstanding Referee* from the American Physical Society
- 2015 – 2019 Appointed *Senior Fellow* at the Frankfurt Institute for Advanced Studies (FIAS)
- 2014 – 2020 ERC Synergy Grant “BlackHoleCam” (with H. Falcke, M. Kramer)
- 2013 Max-Planck Award 2013
- 2012 – Member of the Editorial Board, *Living Reviews in Computational Astrophysics*
- 2010 – Member of the International Society of General Relativity and Gravitation (ISGRG)

Institutional Responsibilities (2004–2019)

- 2019 Member of Review Panel of the Portuguese FCT
- 2018 – Member of the Steering Committee of “PHAROS” (CA16214), COST Action
- 2017 – Member of the Executive Board, *Event Horizon Telescope Collaboration*
- 2017 – Member of the Editorial Board, *Papers in Physics*
- 2017 – Director, Institute for Theoretical Physics, Frankfurt am Main
- 2017 – Member of the PRACE Access Committee
- 2016 Member of Selection Committee of the Italian MIUR
- 2016 – Member of the Editorial Board, *Nature Physics*
- 2014 – 2017 Member of the Interim Executive Board, *Event Horizon Telescope Collaboration*
- 2014 – Member of the Editorial Board, *Computational Astrophysics and Cosmology*
- 2013 – 2017 Chair of “NewCompStar” (MPS1304), COST Action
- 2012 – 2016 Member of the Review Panel for the Canadian NSERC
- 2012 – Member of the Editorial Board, *Living Reviews in Computational Astrophysics*
- 2012 Member of the AERES review panel for the Observatory of Paris, Meudon
- 2014 – Chief Editor of `hyperspace@gu`: the most popular blog about jobs and events in Gravity
- 2009 – 2014 Chief Editor of `hyperspace@aei`: the most popular blog about jobs and events in Gravity
- 2009 Member of SOC of COSPAR 10, Event H02, Bremen, Germany
- 2009 Member of LOC of the International Conference NRDA 2009, Potsdam, Germany
- 2009 Member of SOC 19th of GRG19, Mexico City, Mexico

2007 – 2013 Member of the Executive Board, Virgo-EGO Scientific Council (VESF)
2007 – 2011 Co-Chair of “CompStar”, an ESF-funded research network on compact stars
2007 – 2011 Member of the Steering Committee of CompStar
2006 – 2012 Member of the Editorial Board, *Classical and Quantum Gravity*
2006 Chair of LOC of the Conference *New Frontiers in Numerical Relativity*, Potsdam, Germany
2006 Member of LOC of the *XI Marcel Grossman meeting*, Berlin, Germany
2002 – 2006 Director of the Computing Centre at SISSA, Trieste, Italy
2004 – 2013 Adjunct Professor at the Department of Physics and Astronomy, Louisiana State University, USA
2003 Co-Chair of LOC of the Conference *Sources of Gravitational Waves*, Trieste, Italy
2003 Co-Director of the *Advanced School on Sources of Gravitational Waves*, Trieste, Italy
2002 – 2004 Deputy Director of the Computing Centre at SISSA, Trieste, Italy

I regularly serve in the Scientific Organising Committees (SOCs) and Local Organising Committees (LOCs) of International Conferences and Schools, whose list would be too long to report here.

I am also passionate about reaching out with my research. Over the years I have produced many images from the simulations that I have carried out. Many of them have been used by me and others for public outreach and have appeared on newspapers, magazines, calendars, and, of course, online. These can be found of them after searching for “black holes” or “neutron stars”. Some of these images have also won prestigious awards. Animations of my simulations have ended up on the NASA YouTube totalling more than 6,000,000 downloads, eventually ending-up on the New York Times. In addition, I regularly provide interviews on popular radio shows in Germany (Deutsche Funke) and abroad (BBC, RAI), some of which have also appeared on journals such as The New Scientist.

Professional Reviewing Activity

It is an integral part of my scientific activities to act as a reviewer for scientific Journals or for funding agencies. While this activity is time consuming and only seldom rewarding (being appointed “Outstanding Referee” from the APS was a nice exception), I consider it essential in a peer-reviewed approach to the progress of science.

SCIENTIFIC JOURNALS for which I act as Referee:

- *Annalen der Physik*
- *Journal of Computational Physics*
- *Astronomy and Astrophysics*
- *Journal of Cosmology and Astroparticle Physics*
- *Astroparticle Physics*
- *Journal of Fluid Mechanics*
- *Astrophysical Journal Letters*
- *Journal of Geometry and Physics*
- *Astrophysical Journal*
- *Journal of High Energy Physics*
- *Astrophysics and Space Science*
- *Monthly Notices of the Royal Astronomical Society*
- *Classical and Quantum Gravity*
- *Physical Review D*
- *General Relativity and Gravitation*
- *Physical Review Letters*
- *International Journal of Modern Physics A*
- *Physics Letters B*
- *International Journal of Modern Physics D*
- *SIAM Journal on Scientific Computing*
- *Journal of Applied Mathematics and Physics*

FUNDING AGENCIES for which I act as Referee:

- *Austrian Science Fund (FWF), Austria*
- *Czech Academy of Science (CAS), Czech Republic*
- *Danish Council for Independent Research, Denmark*
- *Deutsche Forschungsgemeinschaft (DFG), Germany*
- *European Research Council (ERC), EU*
- *Found. for Science and Technology (FCT), Portugal*
- *German-Israeli Foundation, Germany-Israel*
- *Irish Research Council for Science (IRCSET), Ireland*
- *Israel Science Foundation (ISF), Israel*
- *Italian Ministry of University and Research (MIUR), Italy*
- *National Research Foundation (NRF), South Africa*
- *National Science Foundation (NSF), USA*
- *Natural Sciences & Eng. Res. Council (NSERC), Canada*
- *Org. for Scient. Research (NWO), The Netherlands*
- *Research Grants Council Hong Kong (CERG), China*
- *Research Foundation Flanders (FWO), Belgium*
- *Science & Technology Facilities Council (STFC), UK*
- *Swiss National Science Foundation (SNF), Switzerland*

Research Grants (2006-2021)

- 2021 DFG Grant on strong-interaction matter (CRC-TR211).
Total budget: **500,000 EUR** over four years.
- 2021 Hessian Excellence Cluster “ELEMENTS”.
Total budget: **12,000 EUR** over two years
- 2020 ERC Advanced Grant, “JETSET”.
Total budget: **2,750,000 EUR** over five years.
- 2019 Postdoctoral fellowship from the Alexander von Humboldt Foundation (awarded to Dr. F. Bacchini).
Total budget: **80,000 EUR** over two years
- 2018 Postdoctoral fellowship from the Alexander von Humboldt Foundation (awarded to Dr. B. Ripperda).
Total budget: **80,000 EUR** over two years
- 2017 DFG Grant on strong-interaction matter (CRC-TR211).
Total budget: **260,000 EUR** over four years.
- 2016 Postdoctoral fellowship from the Alexander von Humboldt Foundation (awarded to Dr. A. Nathanail).
Total budget: **80,000 EUR** over two years
- 2015 Horizon 2020 Research Grant, “Exahype”.
Total budget: **450,000 EUR** over four years.
- 2014 Postdoctoral fellowship from the Alexander von Humboldt Foundation (awarded to Dr. Z. Younsi).
Total budget: **80,000 EUR** over two years
- 2014 Postdoctoral fellowship from the Alexander von Humboldt Foundation (awarded to Dr. T. Hoang).
Total budget: **50,000 EUR** over one year
- 2013 Postdoctoral fellowship from the Alexander von Humboldt Foundation (awarded to Dr. A. Zhidenko).
Total budget: **80,000 EUR** over two years
- 2013 ERC Synergy Grant, “BlackHoleCam” (with H. Falcke and M. Kramer).
Total budget: about 1/3 of **14,000,000 EUR** over six years. These grants represent the most prestigious and substantial form of funding in Europe and for the first time they were awarded for an astrophysics proposal.
- 2013 ESF COST Action, “NewCompStar”.
Total budget: **600,000 EUR** over four years.
- 2012 Volkswagen Stiftung for exchange programme with Uzbekistan.
Total budget: **80,000 EUR** over three years.
- 2010 Postdoctoral fellowship from the Alexander von Humboldt Foundation (awarded to Dr. R. Ciolfi).
Total budget: **80,000 EUR** over two years
- 2010 DFG Grant on gravitational-wave astronomy (SFB-TR7).
Total budget: **480,000 EUR** over four years.
- 2009 Marie Curie Reintegration Grant on Numerical Cosmology (awarded to Dr. E. Bentivegna).
Total budget: **75,000 EUR** over three years
- 2009 MPG Grant to purchase a new a supercomputing cluster.
Total budget: **1,070,000,000 EUR** 2010
- 2009 Postdoctoral fellowship from the Alexander von Humboldt Foundation (awarded to Dr. J. L. Jaramillo).
Total budget: **80,000 EUR** over one year
- 2008 MPG Grant to upgrade the storage system of the local supercomputing cluster.
Total budget: **120,000 EUR**
- 2007 Postdoctoral fellowship from VESF (Virgo-EGO Scientific Council).
Total budget: **70,000 EUR** over two years
- 2009 Postdoctoral fellowship from the Alexander von Humboldt Foundation (awarded to Dr. C. Chirenti).

- Total budget: **80,000 EUR** over one year
- 2006 MPG Grant to purchase a new supercomputing cluster (Damiana).
Total budget: **900,000 EUR** (Damiana ranked 197 in the “top-500” list and the 5th in Germany)
- 2006 Co-PI of CompStar, an ESF-funded research network on the physics of compact.
Total budget: **350,000 EUR** over five years

Over the last 10 years I have regularly applied and obtained computing time at supercomputer facilities in Italy, Germany and the USA. Overall, these requests amount to more than **340 Million hours**. The latest of these grants (October 2018) is an allocation of **100 Million hours** on the German supercomputer SuperMUC; this is the largest allocation awarded to a scientist at the Goethe University in Frankfurt.

Teaching Experience and Courses Given

Essentially since obtaining my PhD I have been involved with teaching, both at SISSA and later on at the AEI and Frankfurt. I have taught and continue to teach a variety of subjects at different levels, which range from more analytic courses to more computationally oriented ones.

FULL COURSES (1999-2019)

- 2020 – 2021 *General Relativity*, ITP Frankfurt (Winter Semester)
- 2020 *Numerical Methods for Physics*, ITP Frankfurt (Summer Semester)
- 2019 – 2020 *Theoretical Physics I*, ITP Frankfurt (Winter Semester)
- 2019 *Numerical Methods for Physics*, ITP Frankfurt (Summer Semester)
- 2018 – 2019 *Hydrodynamics and Magnetohydrodynamics*, ITP Frankfurt (Winter Semester)
- 2018 *Advanced General Relativity*, ITP Frankfurt (Summer Semester)
- 2017 – 2018 *General Relativity*, ITP Frankfurt (Winter Semester)
- 2017 *Advanced General Relativity*, ITP Frankfurt (Summer Semester)
- 2016 – 2017 *Hydrodynamics and Magnetohydrodynamics*, ITP Frankfurt (Winter Semester)
- 2016 *Advanced General Relativity*, ITP Frankfurt (Summer Semester)
- 2015 – 2016 *General Relativity*, ITP Frankfurt (Winter Semester)
- 2015 *Advanced General Relativity*, ITP Frankfurt (Summer Semester)
- 2014 – 2015 *Hydrodynamics and Magnetohydrodynamics*, ITP Frankfurt (Winter Semester)
- 2014 *Numerical Relativity*, ITP Frankfurt (Summer Semester)
- 2004 – 2013 *Introduction to General Relativity*, Intensive course at IMPRS, AEI, Potsdam
- 2004 – 2013 *Introduction to Numerical Relativity*, Intensive course at IMPRS, AEI, Potsdam
- 2005 *Numerical Analysis of First-order Hyperbolic Equations*, Peking University, Beijing
- 2003 *Numerical Methods for the Solution of PDEs*, University of Rome “La Sapienza”
- 2003 *Numerical Methods in Astrophysics*, Silesian Opava University, Czech Republic
- 1999 – 2007 *Numerical Methods for Astrophysics*, Graduate Course, SISSA, Trieste
- 1999 – 2005 *Astrophysical Applications of General Relativity*, Graduate Course, SISSA, Trieste
- 1999 – 2004 *Introduction to General Relativity*, Graduate Course at SISSA, Trieste

SERIES OF LECTURES AT SCHOOLS (2010–2019)

- Mar. 2021 *Relativistic Hydrodynamics*, Paris, France (online)
- Jul. 2019 *Gravitational Waves: New Challenges and Opportunities*, Gebze, Turkey
- Jun. 2019 *59th Cracow School of Theoretical Physics*, Zakopane, Poland
- Oct. 2018 *Astroparticle Physics School*, Baernfels, Germany
- Aug. 2018 *Matter under extreme conditions in Heavy-Ion collisions and Astrophysics*, Dubna, Russia
- Sep. 2017 *NewCompStar School: Mathematical Foundations of Numerical Relativity*, Sofia, Bulgaria
- Sep. 2016 *Giersch International Symposium: Introduction to General Relativity*, Frankfurt, Germany
- Sep. 2016 *NewCompStar School: Neutron stars: gravitational physics theory and observations*, Coimbra, Portugal
- Jan. 2014 *Astrophysics School: Look and Listen*, Playa del Carmen, Mexico

Apr. 2013 *Modelling black hole binaries*, VESF International School, Monte Porzio, Italy
Mar. 2013 *Introduction to numerical relativity*, IMPRS graduate course, Spreewald, Germany
Mar. 2012 *Advanced general relativity: Compact Objects*, Ferienkurs (spring-break course), AEI
May 2012 *Theoretical foundations of astrophysical black holes*, XI SIGRAV International School, Como, Italy
Feb. 2012 *Introduction to general relativity*, IMPRS graduate course, Germany
Mar. 2011 *Advanced general relativity: Compact Objects*, Ferienkurs (spring-break course), AEI
Feb. 2011 *Introduction to general relativity*, IMPRS graduate course, Erkner
Mar. 2010 *Modelling sources of gravitational waves*, Ferienkurs (spring-break course), AEI
Mar. 2010 *Numerical Methods in General Relativity*, IMPRS graduate course, Wandlitz, Germany
Feb. 2010 *Solution of hyperbolic PDEs*, Computational Astrophysics Winter School, Caen, France

Graduate and Undergraduate Studies Advisees

Bachelor (BSc) Students [7]:

- 2015–2016 *Cosima Breu*, Institute for Theoretical Physics, Frankfurt, Germany
- 2015–2016 *Fabian Hoffmann*, Institute for Theoretical Physics, Frankfurt, Germany
- 2015–2016 *David Kling*, Institute for Theoretical Physics, Frankfurt, Germany
- 2016–2017 *Stephan Wystub*, Institute for Theoretical Physics, Frankfurt, Germany
- 2017 *Matteo Lucca*, Institute for Theoretical Physics, Frankfurt, Germany
- 2017 *Bilal Ahmed*, Institute for Theoretical Physics, Frankfurt, Germany
- 2017 *Maria Ignacia Deisen Pinto*, Institute for Theoretical Physics, Frankfurt, Germany
- 2019 *Elena Campanaro*, Institute for Theoretical Physics, Frankfurt, Germany

Laurea-Diplom (MSc) Students [18]:

- 1999–2000 *Ilia Musco*, University of Trieste (with J. C. Miller)
- 2001–2002 *Bruno Giacomazzo*, SISSA & University of Parma (with E. Onofri)
- 2003–2004 *Luca Naso*, SISSA & University of Catania (with A. Bonanno)
- 2004–2005 *Gregor Leiler*, SISSA & University of Udine
- 2007–2008 *Michael Jasiulek*, von Humboldt University, Berlin
- 2007–2008 *Filippo Galeazzi*, AEI & University of Padua, Italy
- 2007–2008 *Philipp Moesta*, AEI & University of Kassel, Germany
- 2008–2009 *David Link*, von Humboldt University, Berlin, Germany
- 2008–2009 *David Radice*, AEI & Politecnico di Milano, Milano
- 2013–2014 *Francesca Lepori*, AEI & Udine University, Italy
- 2014–2015 *Fabian Mueller*, Institute for Theoretical Physics, Frankfurt, Germany
- 2016–2017 *Elias Most*, Institute for Theoretical Physics, Frankfurt, Germany
- 2016–2017 *Natascha Wechselberger*, Institute for Theoretical Physics, Frankfurt, Germany
- 2016–2017 *Lukas Weih*, Institute for Theoretical Physics, Frankfurt, Germany
- 2016–2017 *David Kling*, Institute for Theoretical Physics, Frankfurt, Germany
- 2016–2017 *Cosima Breu*, Institute for Theoretical Physics, Frankfurt, Germany
- 2018–2019 *Jonas Köhler*, Institute for Theoretical Physics, Frankfurt, Germany
- 2018–2019 *Michail Chabanov*, Institute for Theoretical Physics, Frankfurt, Germany

- 2020–2021 *Frederike Kubandt*, Institute for Theoretical Physics, Frankfurt, Germany

- 2020–2021 *Jan Roeder*, Institute for Theoretical Physics, Frankfurt, Germany

Ph.D. Students [25]:

- 1999–2002 *Olindo Zanotti*, SISSA; high-school teacher in Verona, Italy
- 2000–2004 *Luca Baiotti*, SISSA; Assoc. Prof. at Osaka Univ., Japan
- 2000–2004 *Pedro Montero-Muriel*, SISSA (with J. Miller); consultant at LRZ Garching, Germany
- 2002–2005 *Bruno Giacomazzo*, SISSA; Assoc. Prof. at Trento Univ., Italy
- 2004–2008 *Enrico Barausse*, SISSA; Assoc. Prof. at SISSA, Trieste, Italy
- 2005–2009 *Ernazar Abdikamalov*, SISSA (with J. Miller); Assoc. Prof. at Astana, Kazakhstan
- 2006–2010 *Christian Reisswig*, AEI; consultant in private company, Berlin, Germany

2006–2010 *Jennifer Seiler*, AEI; consultant in private company, San Francisco, USA
 2009–2012 *Philipp Moesta*, AEI; Assist. Prof. at Amsterdam, The Netherlands
 2005–2012 *Thorsten Kellermann*, AEI; consultant in private company, Munich, Germany
 2010–2013 *David Radice*, AEI; Assist. Prof. at Penn State, USA
 2008–2014 *Filippo Galeazzi*, AEI; consultant in private company, Bremen, Germany
 2013–2015 *Joachim Friebe*, AEI; entrepreneur, Berlin, Germany
 2009–2015 *Kyriaki Dionysopoulou*, AEI; consultant in private company, Southampton, UK
 2014–2017 *Luke Bovard*, Institute for Theoretical Physics, Frankfurt, Germany
 2014–2017 *Federico Guercilena*, Institute for Nuclear Physics, Darmstadt, Germany
 2016–2018 *Enping Zhou* (with Renxin Xu), Max-Planck Institute for Gravitational Physics, Potsdam, Germany
 2015–2019 *Sven Köppel*, Institute for Theoretical Physics, Frankfurt, Germany
 2016–2019 *Hector Olivares*, Department of Physics, Radboud University, Nijmegen, The Netherlands
 2017–2020 *Elias Most*, Institute for Theoretical Physics, Frankfurt, Germany
 2018– *Jens Papenfort*, Institute for Theoretical Physics, Frankfurt, Germany
 2018– *Lukas Weih*, Institute for Theoretical Physics, Frankfurt, Germany
 2018– *Markus Meyer*, Institute for Theoretical Physics, Frankfurt, Germany
 2019– *Zhenyu Zhu*, ITP Frankfurt and Peking University, Beijing, China
 2019– *Michail Chabanov*, Institute for Theoretical Physics, Frankfurt, Germany
 2019– *Samuel Tootle*, Institute for Theoretical Physics, Frankfurt, Germany

Six of these PhD students have obtained professorships in Kazakhstan (Abdikamalov), Japan, (Baiotti), Italy (Barausse, Giacomazzo), The Netherlands (Moesta), and USA (Radice). I have also supervised more than 20 postdocs, many of whom are now with faculty jobs in Europe (De Laurentis, Harte, Palenzuela, Porth, Sesana, Wardell, Younsi), Japan (Takami, Yoshida), Africa (Pollney), and America (Bernal, Chirenti, Read).

BOOKS

- 2020 *L'irresistibile attrazione della gravità*
L. Rezzolla, Rizzoli Editore, Milano, Italy
- 2019 *The Physics and Astrophysics of Neutron Stars*
L. Rezzolla, Pierre Pizzochero, Ian Jones, Nanda Rea, Isaac Vidaña, ASS Library, Springer
- 2013 *Astrophysical Black Holes*
L. Rezzolla, Chapter 1, Springer Verlag, Heidelberg
- 2013 *Relativistic Hydrodynamics*
L. Rezzolla, O. Zanotti, Oxford University Press
- 2010 *MICRA2009*, CQG Special Issue
 C. Ott, C. Pethick, and **L. Rezzolla** Editors, Class. Quantum Grav. 27 (2010) 110302
- 2007 *New Frontiers in Numerical Relativity*, CQG Special Issue
 M. Campanelli and **L. Rezzolla** Editors, Class. Quantum Grav. 24 (2007) S1-S379
- 2001 *Gravitational Waves: A Challenge to Theoretical Astrophysics*
 V. Ferrari, J. C. Miller and **L. Rezzolla**, ICTP Lecture Series, Vol. 3, ISBN 92-95003-05-5

Recent Publications (2016-2020)

I have published more than **250** papers on various **refereed journals**, many of which as letters (23 in The Astrophysical Journal Letters, 14 in Physical Review Letters, and 8 in Monthly Notices of the Royal Astronomical Society) and about **80** papers as contributions to **proceedings**. The complete list can be found on the NASA ADS server, which also reports more than **19,100 citations** to these works and an **h-index: 79**. Google scholar reports instead about **22,900 citations** and an **h-index: 85**.

Reported below are the publications on refereed journals relative to the time since my appointment at Goethe University.

References

- [1] Zhenyu Zhu, Ang Li, and **Luciano Rezzolla**. *Tidal deformability and gravitational-wave phase evolution of magnetized compact-star binaries*. Phys. Rev. D, 102 084058, (2020).
- [2] Prashant Kocherlakota and **Luciano Rezzolla**. *Accurate mapping of spherically symmetric black holes in a parametrized framework*. Phys. Rev. D, 102 064058, (2020).
- [3] Elias R. Most, L. Jens Papenfort, Lukas R. Weih, and **Luciano Rezzolla**. *A lower bound on the maximum mass if the secondary in GW190814 was once a rapidly spinning neutron star*. Mon. Not. R. Astron. Soc. , 499 L82–L86, (2020).
- [4] Anne Reinartz, Dominic E. Charrier, Michael Bader, Luke Bovard, Michael Dumbser, Kenneth Duru, Francesco Fambri, Alice-Agnes Gabriel, Jean-Matthieu Gallard, Sven Köppel, Lukas Krenz, Leonhard Rannabauer, **Luciano Rezzolla**, Philipp Samfass, Maurizio Tavelli, and Tobias Weinzierl. *ExaHyPE: An engine for parallel dynamically adaptive simulations of wave problems*. Computer Physics Communications, 254 107251, (2020).
- [5] Maciek Wielgus, Kazunori Akiyama, Lindy Blackburn, Chi-kwan Chan, Jason Dexter, Sheperd S. Doelman, Vincent L. Fish, Sara Issaoun, Michael D. Johnson, **Luciano Rezzolla**, and *et al.* *Monitoring the Morphology of M87* in 2009-2017 with the Event Horizon Telescope*. Astrophys. J., 901 67, (2020).
- [6] L. R. Weih, A. Gabbana, D. Simeoni, L. **Rezzolla**, S. Succi, and R. Tripiccion. *Beyond moments: relativistic lattice Boltzmann methods for radiative transport in computational astrophysics*. Mon. Not. R. Astron. Soc. , 498 3374–3394, (2020).
- [7] Jae-Young Kim, Thomas P. Krichbaum, Avery E. Broderick, Maciek Wielgus, Lindy Blackburn, José L. Gómez, Michael D. Johnson, Katherine L. Bouman, Andrew Chael, **Luciano Rezzolla**, and Event Horizon Telescope Collaboration. *Event Horizon Telescope imaging of the archetypal blazar 3C 279 at an extreme 20 microarcsecond resolution*. Astronomy and Astrophysics, 640 A69, (2020).
- [8] Hector Olivares, Ziri Younsi, Christian M. Fromm, Mariafelicia De Laurentis, Oliver Porth, Yosuke Mizuno, Heino Falcke, Michael Kramer, and **Luciano Rezzolla**. *How to tell an accreting boson star from a black hole*. Mon. Not. R. Astron. Soc. , 497 521–535, (2020).
- [9] Roman Gold, Avery E. Broderick, Ziri Younsi, Christian M. Fromm, Charles F. Gammie, Monika Mościbrodzka, Hung-Yi Pu, Thomas Bronzwaer, Jordy Davelaar, Jason Dexter, **Luciano Rezzolla**, and Event Horizon Telescope Collaboration. *Verification of Radiative Transfer Schemes for the EHT*. Astrophys. J., 897 148, (2020).

- [10] Avery E. Broderick, Roman Gold, Mansour Karami, Jorge A. Preciado-López, Paul Tiede, Hung-Yi Pu, Kazunori Akiyama, Antxon Alberdi, Walter Alef, **Luciano Rezzolla**, and Event Horizon Telescope Collaboration. *THEMIS: A Parameter Estimation Framework for the Event Horizon Telescope*. *Astrophys. J.*, 897 139, (2020).
- [11] Lukas R. Weih, Matthias Hanauske, and **Luciano Rezzolla**. *Postmerger Gravitational-Wave Signatures of Phase Transitions in Binary Mergers*. *Phys. Rev. Lett.*, 124 171103, (2020).
- [12] Elias R. Most, Lukas R. Weih, and **Luciano Rezzolla**. *The heavier the better: how to constrain mass ratios and spins of high-mass neutron star mergers*. *Mon. Not. R. Astron. Soc.*, 496 L16–L21, (2020).
- [13] Antonios Nathanail, Ramandeep Gill, Oliver Porth, Christian M. Fromm, and **Luciano Rezzolla**. *On the opening angle of magnetized jets from neutron-star mergers: the case of GRB170817A*. *Mon. Not. R. Astron. Soc.*, 495 3780–3787, (2020).
- [14] Lukas R. Weih, Hector Olivares, and **Luciano Rezzolla**. *Two-moment scheme for general-relativistic radiation hydrodynamics: a systematic description and new applications*. *Mon. Not. R. Astron. Soc.*, 495 2285–2304, (2020).
- [15] Antonios Nathanail, Christian M. Fromm, Oliver Porth, Hector Olivares, Ziri Younsi, Yosuke Mizuno, and **Luciano Rezzolla**. *Plasmoid formation in global GRMHD simulations and AGN flares*. *Mon. Not. R. Astron. Soc.*, 495 1549–1565, (2020).
- [16] A. Cruz-Orsorio and L. **Rezzolla**. *Common-envelope Dynamics of a Stellar-mass Black Hole: General Relativistic Simulations*. *Astrophys. J.*, 894 147, (2020).
- [17] F. Roelofs, M. Janssen, I. Natarajan, R. Deane, J. Davelaar, H. Olivares, O. Porth, S. N. Paine, K. L. Bouman, R. P. J. Tilanus, L. **Rezzolla**, and *et al.* *SYMBA: An end-to-end VLBI synthetic data generation pipeline. Simulating Event Horizon Telescope observations of M 87*. *Astronomy and Astrophysics*, 636 A5, (2020).
- [18] Elias R. Most, L. Jens Papenfort, Veronica Dexheimer, Matthias Hanauske, Horst Stoecker, and **Luciano Rezzolla**. *On the deconfinement phase transition in neutron-star mergers*. *European Physical Journal A*, 56 59, (2020).
- [19] E. R. Most, L. Jens Papenfort, and L. **Rezzolla**. *Beyond second-order convergence in simulations of magnetized binary neutron stars with realistic microphysics*. *Mon. Not. R. Astron. Soc.*, 490 3588–3600, (2019).
- [20] Jordy Davelaar, Hector Olivares, Oliver Porth, Thomas Bronzwaer, Michael Janssen, Freek Roelofs, Yosuke Mizuno, Christian M. Fromm, Heino Falcke, and **Luciano Rezzolla**. *Modeling non-thermal emission from the jet-launching region of M 87 with adaptive mesh refinement*. *Astronomy and Astrophysics*, 632 A2, (2019).
- [21] Kuo Liu, André Young, Robert Wharton, Lindy Blackburn, Roger Cappallo, Shami Chatterjee, James M. Cordes, Geoffrey B. Crew, Gregory Desvignes, Sheperd S. Doeleman, Ralph P. Eatough, Heino Falcke, Ciriaco Goddi, Michael D. Johnson, Simon Johnston, Ramesh Karuppusamy, Michael Kramer, Lynn D. Matthews, Scott M. Ransom, **Luciano Rezzolla**, Helge Rottmann, Remo P. J. Tilanus, and Pablo Torne. *Detection of Pulses from the Vela Pulsar at Millimeter Wavelengths with Phased ALMA*. *Astrophys. J., Lett.*, 885 L10, (2019).
- [22] E. R. Most, L. J. Papenfort, A. Tsokaros, and L. **Rezzolla**. *Impact of High Spins on the Ejection of Mass in GW170817*. *Astrophys. J.*, 884 40, (2019).

- [23] B. Ripperda, F. Bacchini, O. Porth, E. R. Most, H. Olivares, A. Nathanail, **Luciano Rezzolla**, J. Teunissen, and R. Keppens. *General-relativistic Resistive Magnetohydrodynamics with Robust Primitive-variable Recovery for Accretion Disk Simulations*. *Astrophys. J. Suppl.*, 244 10, (2019).
- [24] Hector Olivares, Oliver Porth, Jordy Davelaar, Elias R. Most, Christian M. Fromm, Yosuke Mizuno, Ziri Younsi, and **Luciano Rezzolla**. *Constrained transport and adaptive mesh refinement in the Black Hole Accretion Code*. *Astronomy and Astrophysics*, 629 A61, (2019).
- [25] C. M. Fromm, Z. Younsi, A. Baczko, Y. Mizuno, O. Porth, M. Perucho, H. Olivares, A. Nathanail, E. Angelakis, E. Ros, J. A. Zensus, and **Luciano Rezzolla**. *Using evolutionary algorithms to model relativistic jets. Application to NGC 1052*. *Astronomy and Astrophysics*, 629 A4, (2019).
- [26] Paul J. Easter, Paul D. Lasky, Andrew R. Casey, **Luciano Rezzolla**, and Kentaro Takami. *Computing fast and reliable gravitational waveforms of binary neutron star merger remnants*. *Physical Review D*, 100 043005, (2019).
- [27] Oliver Porth, Koushik Chatterjee, Ramesh Narayan, Charles F. Gammie, Yosuke Mizuno, Peter Anninos, John G. Baker, Matteo Bugli, Chi-kwan Chan, Jordy Davelaar, **Luciano Rezzolla**, and The Event Horizon Telescope Collaboration. *The Event Horizon General Relativistic Magnetohydrodynamic Code Comparison Project*. *Astrophys. J. Suppl.*, 243 26, (2019).
- [28] L. R. Weih, E. R. Most, and **Luciano Rezzolla**. *Optimal Neutron-star Mass Ranges to Constrain the Equation of State of Nuclear Matter with Electromagnetic and Gravitational-wave Observations*. *Astrophys. J.*, 881 73, (2019).
- [29] Veronica Dexheimer, Constantinos Constantinou, Elias R. Most, L. Jens Papenfort, Matthias Hanauske, Stefan Schramm, Horst Stoecker, and **Luciano Rezzolla**. *Neutron-Star-Merger Equation of State*. *Universe*, 5 129, (2019).
- [30] Glòria Montaña, Laura Tolós, Matthias Hanauske, and **Luciano Rezzolla**. *Constraining twin stars with GW170817*. *Phys. Rev. D*, 99 103009, (2019).
- [31] Ramandeep Gill, Antonios Nathanail, and **Luciano Rezzolla**. *When Did the Remnant of GW170817 Collapse to a Black Hole?* *Astrophys. J.*, 876 139, (2019).
- [32] Freek Roelofs, Heino Falcke, Christiaan Brinkerink, Monika Mościbrodzka, Leonid I. Gurvits, Manuel Martin-Neira, Volodymyr Kudriashov, Marc Klein-Wolt, Remo Tilanus, Michael Kramer, and **Luciano Rezzolla**. *Simulations of imaging the event horizon of Sagittarius A* from space*. *Astronomy and Astrophysics*, 625 A124, (2019).
- [33] Event Horizon Telescope Collaboration, Kazunori Akiyama, Antxon Alberdi, Walter Alef, Keiichi Asada, Rebecca Azulay, Anne-Kathrin Baczko, David Ball, Mislav Baloković, John Barrett, and **Luciano Rezzolla**. *First M87 Event Horizon Telescope Results. VI. The Shadow and Mass of the Central Black Hole*. *Astrophys. J. Lett.*, 875 L6, (2019).
- [34] Event Horizon Telescope Collaboration, Kazunori Akiyama, Antxon Alberdi, Walter Alef, Keiichi Asada, Rebecca Azulay, Anne-Kathrin Baczko, David Ball, Mislav Baloković, John Barrett, and **Luciano Rezzolla**. *First M87 Event Horizon Telescope Results. V. Physical Origin of the Asymmetric Ring*. *Astrophys. J. Lett.*, 875 L5, (2019).
- [35] Event Horizon Telescope Collaboration, Kazunori Akiyama, Antxon Alberdi, Walter Alef, Keiichi Asada, Rebecca Azulay, Anne-Kathrin Baczko, David Ball, Mislav Baloković, John Barrett, and **Luciano Rezzolla**. *First M87 Event Horizon Telescope Results. IV. Imaging the Central Supermassive Black Hole*. *Astrophys. J. Lett.*, 875 L4, (2019).

- [36] Event Horizon Telescope Collaboration, Kazunori Akiyama, Antxon Alberdi, Walter Alef, Keiichi Asada, Rebecca Azulay, Anne-Kathrin Baczko, David Ball, Mislav Baloković, John Barrett, and **Luciano Rezzolla**. *First M87 Event Horizon Telescope Results. III. Data Processing and Calibration*. *Astrophys. J. Lett.*, 875 L3, (2019).
- [37] Event Horizon Telescope Collaboration, Kazunori Akiyama, Antxon Alberdi, Walter Alef, Keiichi Asada, Rebecca Azulay, Anne-Kathrin Baczko, David Ball, Mislav Baloković, John Barrett, and **Luciano Rezzolla**. *First M87 Event Horizon Telescope Results. II. Array and Instrumentation*. *Astrophys. J. Lett.*, 875 L2, (2019).
- [38] Event Horizon Telescope Collaboration, Kazunori Akiyama, Antxon Alberdi, Walter Alef, Keiichi Asada, Rebecca Azulay, Anne-Kathrin Baczko, David Ball, Mislav Baloković, John Barrett, and **Luciano Rezzolla**. *First M87 Event Horizon Telescope Results. I. The Shadow of the Supermassive Black Hole*. *Astrophys. J. Lett.*, 875 L1, (2019).
- [39] Elias R. Most, L. Jens Papenfort, Veronica Dexheimer, Matthias Hanauske, Stefan Schramm, Horst Stöcker, and **Luciano Rezzolla**. *Signatures of Quark-Hadron Phase Transitions in General-Relativistic Neutron Star Mergers*. *Phys. Rev. Lett.*, 122 061101, (2019).
- [40] Sven Köppel, Luke Bovard, and **Luciano Rezzolla**. *A General-relativistic Determination of the Threshold Mass to Prompt Collapse in Binary Neutron Star Mergers*. *Astrophys. J. Lett.*, 872 L16, (2019).
- [41] Antonios Nathanail, Oliver Porth, and **Luciano Rezzolla**. *Magnetically Inspired Explosive Outflows from Neutron-star Mergers*. *Astrophys. J. Lett.*, 870 L20, (2019).
- [42] L. Jens Papenfort, Roman Gold, and **Luciano Rezzolla**. *Dynamical ejecta and nucleosynthetic yields from eccentric binary neutron-star mergers*. *Phys. Rev. D*, 98 104028, (2018).
- [43] Arus Harutyunyan, Antonios Nathanail, **Luciano Rezzolla**, and Armen Sedrakian. *Electrical resistivity and Hall effect in binary neutron star mergers*. *European Physical Journal A*, 54 191, (2018).
- [44] Elias R. Most, Antonios Nathanail, and **Luciano Rezzolla**. *Electromagnetic Emission from Blitzars and Its Impact on Non-repeating Fast Radio Bursts*. *Astrophys. J.*, 864 117, (2018).
- [45] G. Stratta, R. Ciolfi, L. Amati, E. Bozzo, G. Ghirlanda, E. Maiorano, L. Nicastro, A. Rossi, S. Vinciguerra, and F. Frontera. *THESEUS: A key space mission concept for Multi-Messenger Astrophysics*. *Advances in Space Research*, 62 662–682, (2018).
- [46] F. Fambri, M. Dumbser, S. Köppel, **L. Rezzolla**, and O. Zanotti. *ADER discontinuous Galerkin schemes for general-relativistic ideal magnetohydrodynamics*. *Mon. Not. R. Astron. Soc.*, 477 4543–4564, (2018).
- [47] L. Amati, P. O’Brien, D. Götz, E. Bozzo, C. Tenzer, F. Frontera, G. Ghirlanda, C. Labanti, J. P. Osborne, and G. Stratta. *The THESEUS space mission concept: science case, design and expected performances*. *Advances in Space Research*, 62 191–244, (2018).
- [48] Elias R. Most, Lukas R. Weih, **Luciano Rezzolla**, and Jürgen Schaffner-Bielich. *New Constraints on Radii and Tidal Deformabilities of Neutron Stars from GW170817*. *Phys. Rev. Lett.*, 120 261103, (2018).
- [49] Mariafelicia De Laurentis, Ziri Younsi, Oliver Porth, Yosuke Mizuno, and **Luciano Rezzolla**. *Test-particle dynamics in general spherically symmetric black hole spacetimes*. *Phys. Rev. D*, 97 104024, (2018).
- [50] T. Bronzwaer, J. Davelaar, Z. Younsi, M. Mościbrodzka, H. Falcke, M. Kramer, and **L. Rezzolla**. *RAPTOR. I. Time-dependent radiative transfer in arbitrary spacetimes*. *Astronomy and Astrophysics*, 613 A2, (2018).

- [51] Michael Dumbser, Federico Guercilena, Sven Köppel, **Luciano Rezzolla**, and Olindo Zanotti. *Conformal and covariant Z4 formulation of the Einstein equations: Strongly hyperbolic first-order reduction and solution with discontinuous Galerkin schemes*. Phys. Rev. D, 97 084053, (2018).
- [52] Yosuke Mizuno, Ziri Younsi, Christian M. Fromm, Oliver Porth, Mariafelicia De Laurentis, Hector Olivares, Heino Falcke, Michael Kramer, and **Luciano Rezzolla**. *The current ability to test theories of gravity with black hole shadows*. Nature Astronomy, 2 585–590, (2018).
- [53] Enping Zhou, Antonios Tsokaros, **Luciano Rezzolla**, Renxin Xu, and Koji Uryu. *Rotating Quark Stars in General Relativity*. Universe, 4 48, (2018).
- [54] Marcio G. B. de Avellar, Oliver Porth, Ziri Younsi, and **Luciano Rezzolla**. *Kilohertz QPOs in low-mass X-ray binaries as oscillation modes of tori around neutron stars - I*. Mon. Not. R. Astron. Soc., 474 3967–3975, (2018).
- [55] Mark G. Alford, Luke Bovard, Matthias Hanauske, **Luciano Rezzolla**, and Kai Schwenzer. *Viscous Dissipation and Heat Conduction in Binary Neutron-Star Mergers*. Phys. Rev. Lett., 120 041101, (2018).
- [56] Sukanta Bose, Kabir Chakravarti, **Luciano Rezzolla**, B. S. Sathyaprakash, and Kentaro Takami. *Neutron-Star Radius from a Population of Binary Neutron Star Mergers*. Phys. Rev. Lett., 120 031102, (2018).
- [57] Enping Zhou, Antonios Tsokaros, **Luciano Rezzolla**, Renxin Xu, and Koji Uryu. *Uniformly rotating, axisymmetric, and triaxial quark stars in general relativity*. Phys. Rev. D, 97 023013, (2018).
- [58] Lukas R. Weih, Elias R. Most, and **Luciano Rezzolla**. *On the stability and maximum mass of differentially rotating relativistic stars*. Mon. Not. R. Astron. Soc., 473 L126–L130, (2018).
- [59] **Luciano Rezzolla**, Elias R. Most, and Lukas R. Weih. *Using Gravitational-wave Observations and Quasi-universal Relations to Constrain the Maximum Mass of Neutron Stars*. Astrophys. J. Lett., 852 L25, (2018).
- [60] C. M. Fromm, M. Perucho, O. Porth, Z. Younsi, E. Ros, Y. Mizuno, J. A. Zensus, and **L. Rezzolla**. *Jet-torus connection in radio galaxies. Relativistic hydrodynamics and synthetic emission*. Astronomy and Astrophysics, 609 A80, (2018).
- [61] John L. Friedman, Lee Lindblom, **Luciano Rezzolla**, and Andrey I. Chugunov. *Limits on magnetic field amplification from the r-mode instability*. Phys. Rev. D, 96 124008, (2017).
- [62] Luke Bovard, Dirk Martin, Federico Guercilena, Almudena Arcones, **Luciano Rezzolla**, and Oleg Korobkin. *r-process nucleosynthesis from matter ejected in binary neutron star mergers*. Phys. Rev. D, 96 124005, (2017).
- [63] E. Zhou, A. Tsokaros, **L. Rezzolla**, and R. Xu. *Maximum mass of axisymmetric rotating quark stars*. Astronomische Nachrichten, 338 1044–1047, (2017).
- [64] Victor Roy, Shi Pu, **Luciano Rezzolla**, and Dirk H. Rischke. *Effect of intense magnetic fields on reduced-magnetohydrodynamics evolution in $\sqrt{s_{NN}}=200$ GeV Au + Au collisions*. Phys. Rev. C, 96 054909, (2017).
- [65] Christian Fromm, Oliver Porth, Ziri Younsi, Yosuke Mizuno, Mariafelicia de Laurentis, Hector Olivares, and **Luciano Rezzolla**. *Radiative Signatures of Parsec-Scale Magnetised Jets*. Galaxies, 5 73, (2017).
- [66] Luke Bovard and **Luciano Rezzolla**. *On the use of tracer particles in simulations of binary neutron stars*. Classical and Quantum Gravity, 34 215005, (2017).
- [67] Luca Baiotti and **Luciano Rezzolla**. *Binary neutron star mergers: a review of Einstein’s richest laboratory*. Reports on Progress in Physics, 80 096901, (2017).

- [68] Matthias Hanauske, Kentaro Takami, Luke Bovard, **Luciano Rezzolla**, José A. Font, Filippo Galeazzi, and Horst Stöcker. *Rotational properties of hypermassive neutron stars from binary mergers*. Phys. Rev. D, 96 043004, (2017).
- [69] Antonios Nathanail, Elias R. Most, and **Luciano Rezzolla**. *Gravitational collapse to a Kerr-Newman black hole*. Mon. Not. R. Astron. Soc., 469 L31–L35, (2017).
- [70] Federico Guercilena, David Radice, and **Luciano Rezzolla**. *Entropy-limited hydrodynamics: a novel approach to relativistic hydrodynamics*. Computational Astrophysics and Cosmology, 4 3, (2017).
- [71] Oliver Porth, Hector Olivares, Yosuke Mizuno, Ziri Younsi, **Luciano Rezzolla**, Monika Moscibrodzka, Heino Falcke, and Michael Kramer. *The black hole accretion code*. Computational Astrophysics and Cosmology, 4 1, (2017).
- [72] Ariadna Murguía-Berthier, Enrico Ramirez-Ruiz, Gabriela Montes, Fabio De Colle, **Luciano Rezzolla**, Stephan Rosswog, Kentaro Takami, Albino Perego, and William H. Lee. *The Properties of Short Gamma-Ray Burst Jets Triggered by Neutron Star Mergers*. Astrophys. J. Lett., 835 L34, (2017).
- [73] Zakaria Meliani, Yosuke Mizuno, Hector Olivares, Oliver Porth, **Luciano Rezzolla**, and Ziri Younsi. *Simulations of recoiling black holes: adaptive mesh refinement and radiative transfer*. Astronomy and Astrophysics, 598 A38, (2017).
- [74] C. Goddi, H. Falcke, M. Kramer, **L. Rezzolla**, C. Brinkerink, T. Bronzwaer, J. R. J. Davelaar, R. Deane, M. de Laurentis, and G. Desvignes. *BlackHoleCam: Fundamental physics of the galactic center*. International Journal of Modern Physics D, 26 1730001–239, (2017).
- [75] Ziri Younsi, Alexander Zhidenko, **Luciano Rezzolla**, Roman Konoplya, and Yosuke Mizuno. *New method for shadow calculations: Application to parametrized axisymmetric black holes*. Phys. Rev. D, 94 084025, (2016).
- [76] Cecilia Chirenti and **Luciano Rezzolla**. *Did GW150914 produce a rotating gravastar?* Phys. Rev. D, 94 084016, (2016).
- [77] Nigel T. Bishop and **Luciano Rezzolla**. *Extraction of gravitational waves in numerical relativity*. Living Reviews in Relativity, 19 2, (2016).
- [78] Yosuke Mizuno, Jose Gómez, Ken-Ichi Nishikawa, Athina Meli, Philip Hardee, **Luciano Rezzolla**, Chandra Singh, and Elisabete Pino. *Magnetic Dissipation in Relativistic Jets*. Galaxies, 4 40, (2016).
- [79] Antonios Tsokaros, Bruno C. Mundim, Filippo Galeazzi, **Luciano Rezzolla**, and Koji Uryu. *Initial-data contribution to the error budget of gravitational waves from neutron-star binaries*. Phys. Rev. D, 94 044049, (2016).
- [80] David Radice, Filippo Galeazzi, Jonas Lippuner, Luke F. Roberts, Christian D. Ott, and **Luciano Rezzolla**. *Dynamical mass ejection from binary neutron star mergers*. Mon. Not. R. Astron. Soc., 460 3255–3271, (2016).
- [81] **Luciano Rezzolla** and Bobomurat J. Ahmedov. *Electromagnetic fields in the exterior of an oscillating relativistic star - II. Electromagnetic damping*. Mon. Not. R. Astron. Soc., 459 4144–4160, (2016).
- [82] Fabian Hofmann, Enrico Barausse, and **Luciano Rezzolla**. *The Final Spin from Binary Black Holes in Quasi-circular Orbits*. Astrophys. J. Lett., 825 L19, (2016).
- [83] **Luciano Rezzolla** and Kentaro Takami. *Gravitational-wave signal from binary neutron stars: A systematic analysis of the spectral properties*. Phys. Rev. D, 93 124051, (2016).

- [84] Cosima Breu and **Luciano Rezzolla**. *Maximum mass, moment of inertia and compactness of relativistic stars*. Mon. Not. R. Astron. Soc., 459 646–656, (2016).
- [85] Shi Pu, Victor Roy, **Luciano Rezzolla**, and Dirk H. Rischke. *Bjorken flow in one-dimensional relativistic magnetohydrodynamics with magnetization*. Phys. Rev. D, 93 074022, (2016).
- [86] Roman Konoplya, **Luciano Rezzolla**, and Alexander Zhidenko. *General parametrization of axisymmetric black holes in metric theories of gravity*. Phys. Rev. D, 93 064015, (2016).
- [87] A. A. Abdujabbarov, **L. Rezzolla**, and B. J. Ahmedov. *A coordinate-independent characterization of a black hole shadow*. Mon. Not. R. Astron. Soc., 454 2423–2435, (2015).
- [88] Victor Roy, Shi Pu, **Luciano Rezzolla**, and Dirk Rischke. *Analytic Bjorken flow in one-dimensional relativistic magnetohydrodynamics*. Physics Letters B, 750 45–52, (2015).
- [89] Kyriaki Dionysopoulou, Daniela Alic, and **Luciano Rezzolla**. *General-relativistic resistive-magnetohydrodynamic simulations of binary neutron stars*. Phys. Rev. D, 92 084064, (2015).
- [90] Yosuke Mizuno, Jose L. Gómez, Ken-Ichi Nishikawa, Athina Meli, Philip E. Hardee, and **Luciano Rezzolla**. *Recollimation Shocks in Magnetized Relativistic Jets*. Astrophys. J., 809 38, (2015).
- [91] Antonios Tsokaros, Koji Uryu, and **Luciano Rezzolla**. *New code for quasiequilibrium initial data of binary neutron stars: Corotating, irrotational, and slowly spinning systems*. Phys. Rev. D, 91 104030, (2015).
- [92] **Luciano Rezzolla** and Pawan Kumar. *A Novel Paradigm for Short Gamma-Ray Bursts With Extended X-Ray Emission*. Astrophys. J., 802 95, (2015).
- [93] Kentaro Takami, **Luciano Rezzolla**, and Luca Baiotti. *Spectral properties of the post-merger gravitational-wave signal from binary neutron stars*. Phys. Rev. D, 91 064001, (2015).
- [94] C. Messenger, Kentaro Takami, Sarah Gossan, **Luciano Rezzolla**, and B. S. Sathyaprakash. *Source Redshifts from Gravitational-Wave Observations of Binary Neutron Star Mergers*. Physical Review X, 4 041004, (2014).
- [95] **Luciano Rezzolla** and Alexander Zhidenko. *New parametrization for spherically symmetric black holes in metric theories of gravity*. Phys. Rev. D, 90 084009, (2014).
- [96] Kentaro Takami, **Luciano Rezzolla**, and Luca Baiotti. *Constraining the Equation of State of Neutron Stars from Binary Mergers*. Phys. Rev. Lett., 113 091104, (2014).
- [97] Viktoriya S. Morozova, **Luciano Rezzolla**, and Bobomurat J. Ahmedov. *Nonsingular electrodynamics of a rotating black hole moving in an asymptotically uniform magnetic test field*. Phys. Rev. D, 89 104030, (2014).
- [98] E. Barausse, V. Morozova, and **L. Rezzolla**. *Erratum: “On the mass radiated by coalescing black-hole binaries” (ApJ, 2012, 758, 63)*. Astrophys. J., 786 76, (2014).
- [99] Thibault Damour, Federico Guercilena, Ian Hinder, Seth Hopper, Alessandro Nagar, and **Luciano Rezzolla**. *Strong-field scattering of two black holes: Numerics versus analytics*. Phys. Rev. D, 89 081503, (2014).
- [100] David Radice, **Luciano Rezzolla**, and Filippo Galeazzi. *High-order fully general-relativistic hydrodynamics: new approaches and tests*. Classical and Quantum Gravity, 31 075012, (2014).

- [101] Daniel M. Siegel, Riccardo Ciolfi, and **Luciano Rezzolla**. *Magnetically Driven Winds from Differentially Rotating Neutron Stars and X-Ray Afterglows of Short Gamma-Ray Bursts*. *Astrophys. J. Lett.*, 785 L6, (2014).
- [102] B. Haskell, R. Ciolfi, F. Pannarale, and **L. Rezzolla**. *On the universality of I-Love-Q relations in magnetized neutron stars*. *Mon. Not. R. Astron. Soc.*, 438 L71–L75, (2014).
- [103] Heino Falcke and **Luciano Rezzolla**. *Fast radio bursts: the last sign of supramassive neutron stars*. *Astronomy and Astrophysics*, 562 A137, (2014).
- [104] David Radice, **Luciano Rezzolla**, and Filippo Galeazzi. *Beyond second-order convergence in simulations of binary neutron stars in full general relativity*. *Mon. Not. R. Astron. Soc.*, 437 L46–L50, (2014).
- [105] Luca Franci, Roberto De Pietri, Kyriaki Dionysopoulou, and Luciano Rezzolla. *Dynamical bar-mode instability in rotating and magnetized relativistic stars*. *Phys. Rev. D*, 88 104028, (2013).

Recent Colloquia and Seminars (2017)

I am normally invited to give presentations as Invited, Plenary or Keynote speaker at national and international conferences. I am also regularly invited to give Colloquia and Public Lectures at Universities in Germany and abroad. In 2018 I have held 24 among Colloquia and speeches at conferences, while these have become 26 in 2019 so far. I find that a list is not particularly informative and report below only the Seminars and Colloquia given in 2017 as these are the last ones I have kept track of.

- 02.02.2017 *The physics and astrophysics of merging neutron-star binaries,*
Colloquium, Physics Department, Bonn, Germany
- 28.02.2017 *The physics and astrophysics of merging neutron-star binaries,*
Colloquium, Kavli Institute, MIT, Boston, USA
- 29.02.2017 *All you ever wanted to know about binary neutron star mergers (and never bothered to ask),*
Colloquium, MIT-LIGO Lab, Boston, USA
- 21.03.2017 *Modelling the most catastrophic astrophysical events in the universe,*
Colloquium, Astronomical Observatory, Trieste, Italy
- 22.03.2017 *The physics and astrophysics of merging neutron-star binaries,*
Colloquium, Department of Physics, Trieste, Italy
- 23.03.2017 *The physics and astrophysics of merging neutron-star binaries,*
Colloquium, Department of Physics, Ferrara, Italy
- 24.03.2017 *Merging systems of binary neutron stars,*
Colloquium, Department of Physics, Bologna, Italy
- 27.03.2017 *Status of numerical relativity simulations of neutron stars,*
Invited Talk, NewCompSstar Annual Meeting, Warsaw, Poland
- 05.04.2017 *The physics and astrophysics of merging neutron-star binaries,*
Colloquium, ESO, Garching, Germany
- 04.05.2017 *Binary neutron stars: Einstein's richest laboratory,*
Colloquium, Institute for Theoretical Physics, Heidelberg, Germany
- 11.05.2017 *State-of-the-art modelling of post-merger signal,*
Colloquium, Physics Department, Birmingham, UK
- 07.06.2017 *Physics and astrophysics of neutron-star binaries: news from Frankfurt,*
Invited Talk, Workshop on Nuclear Matter and Astrophysics, ECT*, Trento, Italy
- 15.06.2017 *The physics and astrophysics of binary neutron stars mergers,*
Colloquium, Albert Einstein Institute, Hannover, Germany
- 20.06.2017 *Physics and astrophysics of neutron-star binaries,*
Invited Talk, Extreme Gravity Stars Workshop, Stockholm, Sweden
- 28.06.2017 *Modelling merging binary neutron stars in Frankfurt: present status and prospects,*
Invited Talk, Advanced Computing Meeting, Department of Physics, Zurich, Switzerland
- 28.06.2017 *The physics and astrophysics of merging neutron-star binaries,*
Invited Talk, Discoveries at the Frontiers of Science Symposium, Frankfurt, Germany
- 03.07.2017 *The physics and astrophysics of merging NS binaries: a report from Frankfurt,*
Invited Talk, Strong Gravity Universe, Azores Islands, Portugal
- 15.07.2017 *From gravitational-wave spectroscopy to nuclear EOS,*
Invited Talk, Strangeness in Quark Matter, Utrecht, The Netherlands
- 25.07.2017 *The physics and astrophysics of binary neutron stars mergers,*
Colloquium, IEEC, Barcelona, Spain
- 16.10.2017 *On Symmetry Restoration in General Relativity,*
Invited Talk, Symmetry 2017, Barcelona, Spain

Research and Teaching Profile

I am a relativistic astrophysicist: *i.e.*, a physicist that uses Einstein's theory of general relativity to describe and explain astronomical observations of black holes and neutron stars. To do this I combine analytical and perturbative tools with numerical nonlinear simulations in which I solve the Einstein equations together with those of relativistic hydrodynamics or magnetohydrodynamics. I do this in the endless process of comparing theoretical results and predictions with astronomical observations. Previously an Associate Professor and Director of the Computing Centre at SISSA (Italy), and then a group leader at the Albert Einstein Institute in Potsdam, I am now the Director of the Institute for Theoretical Physics in Frankfurt. Furthermore, as Chair of Theoretical Astrophysics I lead a group of about 20 scientists, from undergraduate students over to senior postdocs (more information can be found on our web site relastro.uni-frankfurt.de). Over the last 5 years the group, which is funded for almost 2/3 by external funds, has imposed itself as a solid reference in the fields of numerical relativity and astrophysical relativity, it has organised two major international conferences and has published more than 50 papers, with many of them having been published as letters in *ApJ*, *PRL* or *MNRAS*.

My research interests span a large spectrum, which goes from the accretion onto compact objects, over to the fundamental aspects of relativistic hydrodynamics and MHD and up to the modelling of sources of gravitational waves. The latter is the research topic I spend most of my time on. Because of the extreme physical conditions characterising compact astrophysical objects and their often catastrophic dynamics, most of my research is carried out in what I consider a *“relativistic-astrophysics laboratory”*. This is not a laboratory in the ordinary sense but, rather, it is a *virtual* one, a laboratory where the instruments are complex nonlinear equations and numerical algorithms, the pieces of equipment are fast and parallel supercomputers, the experiments are simulations investigating vast spaces of parameters, and the observations are the results of the visualization of enormous amounts of data. Because of this, over the last 20 years I have undertaken a long-term project aimed at building such a relativistic-astrophysics laboratory, in which the numerical solution of Einstein's equations, coupled with those of general relativistic hydrodynamics, magnetohydrodynamics (MHD) and radiative transfer will allow me and my team to investigate, *ab-initio* and accurately, the nonlinear aspects of the physical and astrophysical processes producing the rich observational phenomenology associated with compact objects. The result of this effort are state-of-the-art numerical codes that implement the most sophisticated numerical techniques and represent the state of the art in the solution of the Einstein equations in vacuum and non-vacuum spacetimes. These codes represent therefore, my *virtual* relativistic-astrophysics laboratory. I am deeply convinced that numerical simulations will play a fundamental role of any research in physics and astrophysics in the coming 30 years.

My future research plans revolve around the modelling the emissions from compact objects (neutron stars and black holes) in terms of gravitational waves, electromagnetic radiation or neutrino signals. This goal will be reached by improving and transforming our theoretical modelling of high-energy astrophysics through the exploitation of a sophisticated computational infrastructure to explore a variety of astrophysical problems. I expect that these scientific efforts will play a fundamental role in shaping the theoretical landscape in a number of present and future international experimental and observational efforts such as: LIGO/Virgo, the Event Horizon Telescope, LISA and third-generation gravitational-wave detectors such as the Einstein Telescope and LIGO Cosmic Explorer.

In addition to research, my scientific activity over the years has always been accompanied by an intense activity of teaching and student supervision. Over the last 16 years I have supervised 7 BSs students, 18 MSc students and 25 PhD students (6 of whom are ongoing). Many of these students have pursued an academic career and have now faculty positions or are distinguished scientists: *E. Abdikamolov* (Associate Professor in Astana, Kazakhstan), *L. Baiotti* (professor in Osaka, Japan), *E. Barausse* (Associate Professor in SISSA, France), *B. Giacomazzo* (Associate professor in Trento, Italy), *P. Moesta* (Assistant Professor in Amsterdam), *D. Radice* (Assistant Professor in Penn State), *O. Zanotti* (previously Assistant Professor in Trento, Italy). In addition, I have also assisted several of my post-docs in pursuing a career in academia, such as with *M. de Laurentis* (Associate Professor in Naples), *O. Porth* (Assistant Professor in Amsterdam), *Z. Younsi* (Assistant Professor in London).

I have taught and continue to teach a variety of subjects at different levels. These range from more analytic courses (such as General Relativity, Advanced General Relativity, Astrophysics of Compact Objects, Astrophysical Relativity) to more computationally oriented ones (such as Numerical Methods for Astrophysics, Numerical Analysis of Hyperbolic and Parabolic Equations, Introduction to Numerical Relativity). A complete list of the courses given is presented in the CV.

Much of my contributions to teaching and training are embodied in the book I have written in 2013 on “Relativistic Hydrodynamics”. The book has received glowing reviews from the experts (see Oxford University Press) and general readers (see amazon.com), and is universally recognised as “... the definitive book on the subject...” (K. Thorne). Another example in this direction is the recent book published by Springer “The Physics and Astrophysics of Neutron Stars”. The book, which has more than 800 pages and has a record number of downloads, offers a comprehensive overview of all the research carried out on compact stars and is the perfect reference for any young researcher wishing to work in this area.

Finally, I am presently writing a book on General Relativity that collects my lecture notes on the courses “General Relativity” and “Advanced General Relativity”.