Sebastiano Bernuzzi

Personal data

Date of birth: [redacted]
Place of birth:
Nationality:
Status:

Address: Theoretisch-Physikalisches Institut
Friedrich-Schiller-Universität Jena
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Appointments

2018 - . Professor (W2), Jena U, Germany.

2017 - 2018 Associate Professor, Parma U, Italy.

2014 - 2017 Assistant Professor (Ricercatore RTD-B), Parma U, Italy,
Fellow of the national programme for excellence in science "Rita Levi Montalcini".

2014 - 2015 Postdoctoral Research Associate, Theoretical Astrophysics,
California Institute of Technology, Pasadena USA.

2009 - 2014 Postdoctoral Research Associate,
Theoretical Physics, Jena U, Germany.

Education

2006 - 2009 PhD in Theoretical Physics, Parma U, Italy.

2005 Laurea Specialistica in fisica teorica (MSc in Theoretical Physics), Parma U, Italy.
Final grade: 110/110 *cum laude*.

2003 Summer project *Beppo*SAX data analysis of X-ray emission from active galactic nuclei, IASF/CNR,
Bologna, Italy.

Research field

General and computational relativity, gravitational-wave astronomy.

Scientific interests

- Gravitational waves, relativistic two-body problem, effective-one-body model.
- Neutron star mergers, multimessenger astrophysics and data analysis.
- Formulation of Einstein equations, methods for numerical relativity.
- Relativistic magnetohydrodynamics and radiation.
- Perturbation theory of relativistic stars and black holes.
- Computational physics.

Qualifications and Awards

2017 Italian habilitation in Theoretical Physics of fundamental interactions (ASN, II fascia 02/A2).

2017 Italian habilitation in Astronomy and Astrophysics (ASN, II fascia 02/C1).

2003 Best MSc student in Physics, Parma U, Italy.

Grants and Fellowships

2023 Bilateral cross-border research projects (EU Weave Lead Agency Process) Deutsche Forschunggemainschaft (DFG) and Narodowe Centrum Nauki (NCN) "MERLIN: Magnetic field dynamics and turbulence in neutron stars" (∼185k€), Co-PI (cooperation partner, Dr. B.Haskell, CAMK).

2023 Deutsche Forschunggemainschaft (DFG) "GROOVHY: Gravitational radiation from black holes' hyperbolic mergers" (∼320k€), PI.

2022 Consolidator grant, European Research Council (ERC-CoG) Horizon programme (∼ 2M€). PI.

2020 Deutsche Forschunggemainschaft (DFG) "Modeling ElectroMagnetic waves and Inference from multi-messenger observations of neutron star mergers" (∼200k€), PI.

2019 Michael Stifel Center Jena, Funding to sponsor the MICRA2019 workshop August 2019 (5k€).

2019 Graduate programme GRK2522/1 "Starke Dynamik und Kirtikalitaet in Quanten und Gravitationssystemen", Deutsche Forschunggemainschaft (DFG) (∼ 1.13M€). Co-PI.

2018 EU COST PHAROS, PHAROS PhD Training School (25k€). PI.

2017 Premiale ASI-INAF-INFN, "Fostering the Italian leadership in the field of gravitational wave astrophysics" PI: G.Gemme (INFN) Co-PI: G.Ghirlanda (INAF), S.Vitale (ASI) (∼ 1.5M€). Group leader.

2017 Framework for attraction and reinforcement of excellence research in Italy (FARE) of the Italian Ministry of Research and Education (MIUR) (171k€). PI [Declined, relocation to Jena].

2017 COST Action Proposal OC-2016-2-21453 "The multi-messenger PHysics and Astrophysics of neutROn Stars (PHAROS)" PI: N.Rea. Member of the Network of Proposers.

2016 Starting grant, European Research Council (ERC-StG) Horizon 2020 programme (∼ 1.4M€). PI.

2016 Grant for a 2-years postdoc position, Istituto Nazionale di Fisica Nucleare (INFN, Italian National Institut of Nuclear Physics) and Italian Interministerial Committee for Economical Planning (CIPE).PI.

2016 Vidi grant, Netherlands Organisation for Scientific Research (NWO) (∼800k€). PI. [Declined].

2014 Ministero dell'Istruzione, Universitá e Ricerca (MIUR, Italian Ministry of Research and Education), Excellence science programme "Rita Levi Montalcini". PI.

2010 - 2013 Short-visit fellowships at Institut des Hautes Etudes Scientifiques (IHES), Paris, France.

2006 Marie Curie Early Stage Research Training (ESRT) fellowship, Institute Henry Poincare Paris, France.

2006 - 2009 Istituto Nazionale di Fisica Nucleare (INFN) PhD fellowship.

Approved HPC allocations (Peer-reviewed, ch=core-hours):

2024 High Performance Computing Center Stuttgart (DE), 80M ch, PI.

2023 Leibniz Supercomputing Centre (DE), 42M ch, PI.

2022 Leibniz Supercomputing Centre (DE), 26M ch, PI.

2021 High Performance Computing Center Stuttgart (DE), 70M ch, PI.

2020 Leibniz Supercomputing Centre (DE), 40M ch, PI.

2020 Gauss, Leibniz Supercomputing Centre (DE), 50M ch, PI.

2018 Gauss, Leibniz Supercomputing Centre (DE), 75M ch, PI.

2017 XSEDE, TG-PHY160025 (USA), 6M ch, Co-PI.

2017 PRACE 14th call, 42M ch, PI.

2016 ISCRA Type B, HP10BMAB71 (IT), 7M ch, PI.

2016 XSEDE, TG-PHY160025 (USA), 3.7M ch, Co-PI.

2015 ISCRA Type C, HP10CMEFI6 (IT), PI.

2015 XSEDE, TG-PHY100033 (USA), 32M ch, Co-PI.

2014 XSEDE, TG-PHY140019 (USA), 3M ch, Co-PI.

Memberships

2022 - . Member of the Einstein Telescope collaboration and of the **ET Collaboration Board**.

2020 - . Member of the ENGRAVE collaboration.

2019 - . Member of the LISA consortium.

2019 - . Member of the Deutsche Physicalisches Gesellschaft.

2018 - . Member of the Michael Stifel Center Jena.

2017 - 2023 Member of the **Virgo Steering Committee**.

2017 - . Member of the Virgo Scientific Collaboration.

2017 - 2022 Member of GWverse COST Action.

2017 - 2022 Member of PHAROS COST Action.

2015 - 2018 Member of Istituto Nazionale di Fisica Nucleare (INFN).

2014 - 2017 Member of American Physical Society and Topical Group in Gravitation (GGR).

2015 - 2016 Member of LIGO/LSC.

2009 - 2014 Member of SFB/TR7 Gravitational Wave Astronomy collaboration.

2012 - 2014 Member of Numerical Relativity/Analytic Relativity collaboration (NRAR).

2009 - 2013 Member of CompStar Research Network.

2006 - 2009 Member of Istituto Nazionale di Fisica Nucleare (INFN).

Other leading roles

2022 - . Leader of Jena's Einstein Telescope research unit.

2018 - 2023 Leader of PROMETEO Virgo group.

2018 Local coordinator for INFN Teongrav initiative (Parma).

2017 - 2022 PHAROS COST action, Member of steering commitee and Leader of WG1.

2017 - 2018 Local coordinator for INFN Virgo initiative (Milano Bicocca and Parma).

2017 GWVerse COST action, Topic leader in working group 1 (Astrophysics).

Postdocs supervision

2024 - . Dr. S. Albanesi

2024 - . Dr. M. Jacobi

2023 - . Dr. L. Longo

2020 - . Dr. W. Cook

2019 - . Dr. B. Daszuta

2021 - 2023 Dr. S. Borhanian (→ PD at Milano Bicocca U, Italy)

2022 - 2022 Dr. G. Carullo (→ Marie Curie Interactions fellow, Niels Bohr Institute, Copenhagen)

2020 - 2022 Dr. G. Doulis (→ postdoc Göthe U/SPACE project, Frankfurth)

2020 - 2021 Dr. K. Chakravati (→ postdoc PD Indian Institute of Technology, Gujarat)

2018 - 2020 Dr. A. Endrizzi (→ Industry)

2018 - 2020 Dr. S. Akcay (→ Lecturer at University College Dublin)

2018 - 2019 Dr. M. Agathos (→ KAVLI fellow at Cambridge)

2018 - 2019 Dr. N. Ortiz (→ Ass.Prof. at UNAM, Mexico)

2017 - 2019 Dr. A. Perego (→ Ass.Prof. at Trento U, Italy)

Students supervision (CoA = Co-Advisor)

PhD (12) A.Capobianco (Jena U, 2024-.), G.Huez (Jena U, 2024-.), J.Fontebute (Jena U, 2024-.), F.Magistrelli (Jena U, 2023-.), A.Gonzalez (Jena U, 2020-.), R.Gamba (Jena U, 2019-2023 *Friedrich-Schiller-University Jena thesis prize*), V.Nedora (Jena U, 2018-2021), M.Breschi (Jena U, 2018-2022), F.Zappa (Jena U, 2018-2023), E.Harms (Jena U, 2012-2015 CoA), T.Dietrich (Jena U, 2012-2015 CoA *German Physical Society thesis prize; Friedrich-Schiller-University Jena thesis prize*), M.Thierfelder (Jena U, 2009-2012 CoA).

MSc (15) P.Pandey (Jena U, 2024), T.Tariq (Hannover U, 2024 CoA), F.Brandoli (Bologna U, 2023 CoA), N.Venuti (Trieste U, 2023 CoA), L.Li (Freiburg 2022, CoA), A.Kuch (Jena U, 2021), L.Lippold (Jena U, 2021), N.Marcantognini (Camerino U, 2019 CoA), J.Tissino (Padova U, 2019 CoA), A.Gonzalez (Jena U, 2020), F.Schianchi (Parma U, 2019), R.Gamba (Torino U, 2019 CoA), F.Zappa (Parma U, 2018), T.Dörffel (Jena U, 2015 CoA), E.Harms (Jena U, 2012 CoA).

BSc (12) D.Dietrich (Jena U, 2024), C.Lamster (Jena U, 2023), A.Naumann (Jena U, 2023), T.Brächer (Jena U, 2022), T.Dieselhorst (Jena U, 2021), E.Donkersloot (Jena U, 2020 *FSU Honours Programme for Future Researchers 2021*), A.Kuch (Jena U, 2020), N.Marcantognini (Camerino U, 2019 CoA), L.C.Lippold (Jena U, 2019), M.Kriening (Jena U, 2019), J.Borst (Jena U, 2013 CoA), T.Dörffel (Jena U, 2012 CoA).

Teaching

My teaching duties amount to 9 hours/week/semester. I regularly serve in PhD committees at Jena (approx. 3/semester). I am/have been responsibile for the following courses:

2024 - . *Computational Physics III*, FSU Jena (BSc).

2020 - .

2024 - . *Quantum Mechanics* FSU Jena (BSc).

2021 - . *Computational Physics II*, FSU Jena (BSc).

2020 - . *Advanced Quantum Mechanics* FSU Jena (MSc).

2020 - . *Computational Fluid Dynamics* FSU Jena (MSc/PhD).

2018 - . *General Relativity* FSU Jena (MSc/PhD).

2018 - . *Gravitational Waves* FSU Jena (MSc/PhD).

2018 - . *Numerical Relativity* FSU Jena (MSc/PhD).

2015 - 2017 *Computational Physics*, Parma U (MSc).

Invited lecturer at PhD international schools:

2024 Balzan lectures "Introduction to Numerical Relativity", IHES (FR).

2023 63rd Cracow School of Theoretical Physics "Nuclear Matter at Extreme Densities and High Temperatures", Zakopane (PL).

2023 Galileo Galilei Institute (GGI) school on "Theoretical Aspects of Astroparticle Physics, Cosmology and Gravitation", Firenze (IT).

2021 International School on AstroParticle Physics (ISAPP) summer school on "Gravitational Waves", Online.

2021 Galielo Galilei Institute (GGI) workshop on "Gravitational scattering, inspiral, and radiation", Firenze (IT).

2018 Les Houches school "Gravitational Waves: Physics and Astronomy", Les Houches (FR).

2018 Lake Como Schools of Advanced Studies "Waves on the lake: the astrophysics behind gravitational waves", Como (IT).

Publications summary

My papers are published in high impact factor journals like Astrophysical Journal, Astrophysical Journal Letters, Classical Quantum Gravity, Monthly Notices of the Royal Astronomical Society Letters, Monthly Notices of the Royal Astronomical Society, Nature Astronomy, Physical Review Letters, Physical Review D.

From INSPIRES-HEP statistics on 03.05.2024 (the short-authorlist excludes papers with more than 20 authors):

- Peer-reviewed papers (since 2008, all): 215
- H-index (all): 64
- Peer-reviewed papers (since 2008, short-authorlist): 115
- Peer-reviewed journal letters (short-authorlist): 14
- Number of total citations (short-authorlist): 5690
- Preprints/in-press (short-authorlist): 19
- H-index (short-authorlist): 44
- **Invited reviews**: 2

1. *Neutron Star Merger Remnants* (2020) in General Relativity and Gravitation (Springer) [**100+**].
2. *The Dynamics of Binary Neutron Star Mergers and GW170817* (2020) in Annual Review of Nuclear and Particle Science (co-authored) [**150+**].

- Invited popular science article *Kollision mit Schlagseite*, Naturwissenschaftliche Rundschau, März 2023, 120

A complete publication list with citation metrics is attached to the CV.

Selected publications

Inverse chronological order and [**cites as of 03.05.2024**]

1. *GW190521 as a dynamical capture of two nonspinning black holes* R. Gamba, M. Breschi, G. Carullo, S. Albanesi, P. Rettegno, **S. Bernuzzi** and A. Nagar [**90+**]
   Nature Astron. **7** (2023) no.1, 11-17 doi:10.1038/s41550-022-01813-w
2. *Time-domain effective-one-body gravitational waveforms for coalescing compact binaries with nonprecessing spins, tides and self-spin effects* A. Nagar, **S. Bernuzzi**, W. Del Pozzo, G. Riemenschneider, S. Akcay, *et al.* [**200+**]
   Phys. Rev. D 98 (2018) no.10, 104052, doi:10.1103/PhysRevD.98.104052
3. *AT2017gfo: An Anisotropic and Three-component Kilonova Counterpart of GW170817*
   A. Perego, D. Radice and **S. Bernuzzi** [**200+**]
   Astrophys. J. 850, no. 2, L37 (2017) DOI:10.3847/2041-8213/aa9ab9
4. *GW170817: Joint Constraint on the Neutron Star Equation of State from Multimessenger Observations* D. Radice, A. Perego, F. Zappa and **S. Bernuzzi** [**500+**]
   Astrophys. J. 852, no. 2, L29 (2018) DOI:10.3847/2041-8213/aaa402
5. *Closed-form tidal approximants for binary neutron star gravitational waveforms constructed from high-resolution numerical relativity simulations* T. Dietrich, **S. Bernuzzi** and W. Tichy [**200+**]
   Phys. Rev. D 96 (2017) no.12, 121501 doi:10.1103/PhysRevD.96.121501
6. *Modeling the complete gravitational wave spectrum of neutron star mergers* **S. Bernuzzi**, T. Dietrich and A. Nagar [**200+**]
   Phys. Rev. Lett. 115, 091101 (2015) DOI:10.1103/PhysRevLett.115.091101
7. *Modeling the Dynamics of Tidally Interacting Binary Neutron Stars up to the Merger* **S. Bernuzzi**, A. Nagar, T. Dietrich and T. Damour [**200+**]
   Phys. Rev. Lett. 114, no. 16, 161103 (2015) DOI:10.1103/PhysRevLett.114.161103
8. *Quasiuniversal properties of neutron star mergers* **S. Bernuzzi**, A. Nagar, S. Balmelli, T. Dietrich and M. Ujevic [**100+**]
   Phys. Rev. Lett. 112, 201101 (2014), DOI:10.1103/PhysRevLett.112.201101
9. *Tidal effects in binary neutron star coalescence* **S. Bernuzzi**, A. Nagar, M. Thierfelder and B. Brugmann [**150+**]
   Phys. Rev. D 86, 044030 (2012), DOI:10.1103/PhysRevD.86.044030.
10. *Constraint violation in free evolution schemes: Comparing BSSNOK with a conformal decomposition of Z4* **S. Bernuzzi** and D. Hilditch [**200+**]
    Phys. Rev. D 81, 084003 (2010), DOI:10.1103/PhysRevD.81.084003.

Invited talks and lectures (53)

1. *Introduction to Numerical Relativity* Physik-Combo, Septermber 2024, Leipzig (Germany).
2. *Modeling the strong-field dynamics of binary neutron star merger* CENTRA Seminar, September 2024, Lisbon (Portugal).

3. *Compact objects & Gravitational waves* Wilhelm and Else Heraeus Summer School Astronomy from Multiple Perspectives, September 2024, Jena (Germany).
4. *Binary neutron star simulations* European Einstein Toolkit Meeting 2024, July 2024, Amsterdam (Netherlands).
5. *Modeling the strong-field dynamics of binary neutron star merger* DPG meeting, March 2024, Giesen (Germany).
6. *Introduction to Numerical Relativity* Balzan lectures, February 2024, IHES (France).
7. *The general-relativistic two-body problem in the gravitational-wave astronomy era* GAPP seminar Penn State, December 2023, State College (USA).
8. *Extreme Matter Constraints from Neutron Star Mergers and Gravitational Waves* GraSP23 Gravity Shape Pisa: New Frontiers in Gravity Phenomenology, October 2023, Pisa (IT).
9. *Extreme Matter Constraints from Neutron Star Mergers and Gravitational Waves* **63rd Cracow School of Theoretical Physics** on "Nuclear Matter at Extreme Densities and High Temperatures", September 2023, Zakopane (PL).
10. *The binary black hole mergers laboratory* Infinity on a gridshell, Nils Bohr Institute, July 2023, Copenhagen (DK).
11. *Modeling the strong-field dynamics of binary neutron star merger* Physics seminar at Pisa U, March 2022, Pisa (IT).
12. *Gravitational waves from compact objects* **Galielo Galilei Institute (GGI) school** on "Theoretical Aspects of Astroparticle Physics, Cosmology and Gravitation". March 2023, Firenze (IT).
13. *Modeling the strong-field dynamics of binary neutron star merger* Institute of Cosmos Sciences, December 2022, Barcelona (SP).
14. *Modeling the strong-field dynamics of binary neutron star merger* ECT* workshop "Neutron stars as multi-messenger laboratories for dense matter", June 2022, Trento (IT).
15. *Numerical relativity simulations and Gravitational wave modeling* INT-20-1b, Institute of Nuclear Theory, May 2022, Seattle (USA).
16. *Analytical and Numerical Relativity Modeling of Binary Neutron Star Mergers (and Some Highlights from Binary Black Holes)* Damour Fest: Adventures in Gravitation, IHES, October 2021, Paris (FR).
17. *Numerical relativity modeling of ejecta and kilonovae from binary neutron star merger* Sixteenth Marcel Grossmann Meeting (MG16), July 2021 (on-line).
18. *Numerical Relativity* **Galielo Galilei Institute (GGI) school** on "Gravitational scattering, inspiral, and radiation", April 2020, Firenze (IT).
19. *Modeling the strong-field dynamics of binary neutron star merger* ECT* workshop "Neutron stars as multi-messenger laboratories for dense matter", April 2021, Trento (IT).
20. *Compact Objects* **International School on AstroParticle Physics** (ISAPP) summer school on "Gravitational Waves", April 2021 (on-line).
21. *Modeling the strong-field dynamics of binary neutron star merger* Gravity Initiative Lunch seminar, January 2021, Princeton (USA).
22. *Modeling the strong-field dynamics of binary neutron star merger* Penn State University colloquium, October 2020, Penn State College (USA).
23. *Modeling the strong-field dynamics of binary neutron star merger* INT-20-1b Online preworkshop, Institute of Nuclear Theory, March 2020, Seattle (USA).
24. *Modeling the strong-field dynamics of binary neutron star merger* Tautemburg observatory, October 2019, Tautemburg (DE).

25. *Modeling the strong-field dynamics of binary neutron star merger* Albert Einstein Institute, September 2019, Potsdam-Golm (DE).
26. *Modeling the strong-field dynamics of binary neutron star merger* Rencontre du groupe de travail "Formes d'onde", Institute Astrophysique Paris (IAP), May 2019, Paris (FR).
27. *Modeling the strong-field dynamics of binary neutron star merger* DPG conference in München 2019, Session GR 6.1 (DE).
28. *Mergers, simulations, and counterparts* GWEOS workshop, Constraining the equation of state of matter at extreme densities with gravitational wave observations, February 25-26 2019, Pisa (IT).
29. *Numerical Relativity: Binaries With Neutron Stars and Effects of Matter* **Les Houches school** on "Gravitational Waves: Physics and Astronomy", July 2018, Les Houches (FR).
30. *Numerical relativity application to binaries neutron stars* Waves on the lake: the astrophysics behind gravitational waves, **Lake Como Schools of Advanced Studies**, June 2018, Como (IT).
31. *Modeling gravitational-waves from binary neutron stars* Neutron Stars in Lisbon, Lisbon, April 2018, Lisbon (PT).
32. *Constraints on the EOS from GW* GRAvitational-waves Science&technology Symposium (GRASS), March 2018, Padova (IT).
33. *Modeling gravitational-waves from binary neutron stars* Colloquium, Universitá La Sapienza, February 2018, Roma (IT).
34. *Modeling neutron star binaries and gravitational waves with numerical relativity* SM&FT 2017 - The XVII Workshop on Statistical Mechanics and nonpertubative Field Theory (High Performance Computing in Theoretical Physics), December 2017, Bari (IT).
35. *Gravitational-waves: new messengers from the Cosmo* **Lectures for the graduate programme (Graduiertenkolleg) of Graz University**, November 2017, Graz (AU).
36. *Numerical relativity in the gravitational-wave astronomy era* HPC methods for Computational Fluid Dynamics and Astrophysics at CINECA, November 2017, Bologna (IT).
37. *Modeling neutron star binaries and gravitational waves with numerical relativity* Workshop "Advances in General Relativity", part of the Programme on "Geometry and Relativity", **Erwin Schrödinger International Institute for Mathematics and Physics**, University of Vienna, August 2017, Vienna (AU).
38. *Constraining neutron star matter with gravitational waves from neutron star binaries* 15th International Conference on QCD in Extreme Conditions (XQCD 2017), June 2017, Pisa (IT).
39. *Modeling neutron star binaries and gravitational waves with numerical relativity* New Frontiers in Gravitational-Wave Astrophysics, June 2017 Rome (IT).
40. *Modeling neutron star binaries and gravitational waves with numerical relativity* Nuclear Astrophysics in the Gravitational Wave Astronomy Era workshop, European Centre for Theoretical studies in nuclear physics and related areas (ECT*), June 2017, Trento (IT).
41. *Modeling neutron star binaries and gravitational waves with numerical relativity* Bridging Nuclear and Gravitational Physics: the Dense Matter Equation of State, ECT*, June 2017 Trento (IT).
42. *Modeling neutron star binaries and gravitational waves with numerical relativity* Virgo week, January 2017, Pisa (IT).
43. *Modeling neutron star binaries and gravitational waves with numerical relativity* Colloquium at Radboud U, January 2017, Nijmengen (NL).
44. *Modeling neutron star binaries and gravitational waves with numerical relativity* Conference "Physics@Veldhoven", January 2017, Veldhoven (NL).

45. *Black hole mergers and gravitational waves* Invited lecture at XII edition of the Avogadro Meeting, December 2016, Perugia (IT).
46. *Modeling neutron star binaries and gravitational waves with numerical relativity* Workshop "GW161212: The Universe through gravitational waves", Simons Center for geometry and physics, December 2016, Stony Brook (USA).
47. *Modeling gravitational waves from neutron stars mergers* Albert Einstein Institute, May 2016, Potsdam-Golm (DE).
48. *Modeling gravitational waves from neutron stars mergers* Vienna University, January 2016, Vienna (AT).
49. *Modeling gravitational waves from neutron stars mergers* Canadian Institute for Theoretical Astrophysics, April 2015, Toronto (CA).
50. *Modeling gravitational waves from neutron stars mergers* Rochester Institute of Technology, April 2015, Rochester (USA).
51. *Numerical simulation of neutron star mergers* NARDA meeting Fullerton, August 2014, Fullerton CA (USA).
52. *The Z4c formulation for numerical relativity* CoCoNut meeting at the Observatoire de Paris, December 2013, Paris (FR).
53. *Numerical relativity simulations of neutron star mergers: Tidal signatures in gravitational waves, comparison with analytical methods, and new developments* Trento University, November 2013, Trento (IT).
54. *Gravitational waves from neutron star binaries: numerical relativity simulations and analytical models* Cardiff University, July 2013, Cardiff (UK).
55. *Numerical relativity simulations of binary neutron star mergers* API, December 2011, Amsterdam (NL).
56. *Numerical relativity simulations using the Z4c formulation* Séminiaires du laboratoire at LUTH, May 2010, Meudon (FR).
57. *Modeling compact objects dynamics in GR* Parma University, Relativity Seminars, July 2009, Parma (IT).

Professional services

- Reviewer for various research programme, including Alexander von Humboldt Foundation, Deutsche Forschunggemainschaft, European Research Council, US National Science Fundation, Swiss National Science Fundation.
- Reviewer for Astrophysical Journal, General Relativity and Gravitation, Physical Review D/Physical Review Letters, International Journal of Modern Physics, Living Reviews Relativity, Monthly Notices of the Royal Astronomical Society.
- Reviewer of HPC grant proposals for PRACE and ISCRA.
- Member of PhD defense committes at Jena FSU (approx. 3 per semester).
- Invited referee and external member of PhD defense commitees:

  2021 PhD P.J. Easter (Monash U, AUS)

  2021 M.Phil. Harry Ho Yin, NG (The Chinese University of Hong Kong)

  2018 PhD A. Endrizzi (Trento U, IT)

2022 - . Member of committee screening the admissions to the Master in Physics, FSU Jena.

2022 - . Member of committee for Physics' Faculty (PAF) Colloquia, FSU Jena.

2022 Organizer and SOC member of the international conference *Frontiers in Numerical Relativity 2022*, Jena. https://indico.tpi.uni-jena.de/event/222/overview

2020 - . Member of selection commitee of the EU H2020 AHEAD2020 initialitive ("Integrated activities for high-energy astrophysics domain".)

2020 - . Member of the Editorial Board of open-access journal Particle (MDPI).

2019 SOC member and organizer of MICRA2019 (Microphysics In Computational Relativistic Astrophysics), 2019, Jena. https://indico.tpi.uni-jena.de/event/28/

2019 SOC member of Special Symposium at EWASS 2019 SS26 European Week of Astronomy and Space Science (EWASS) 2019, Lyon. http://eas.unige.ch/EWASS2019/

2019 Organizer of the first PHAROS PhD training school. *PHAROS PhD Training School: Multi-messenger physics and astrophysics with compact binaries*, Jena. https://indico.tpi.uni-jena.de/event/2/overview

2018 Organizer of the workshop *Four challenges in gravitational-wave astronomy with neutron stars*, Parma. http://www.pr.infn.it/html_extra/gworkshop/gw180116/.

2017.10.16 Organizer of the outreach event *Onde gravitazionali: nuove scoperte dal cosmo* University of Parma, Campus.

2017 Member of the Scientific Organising Committee for the Annual NewCompStar conference, Warsaw. https://indico.camk.edu.pl/event/1/.

2017 - 2018 Spokesperson for the Mathematics, Physics and Computer sciences department in the administrative unit of the University of Parma that promotes competitive research.

2016 Organizer of the *GraviLab* event wihtin the European Researchers Night 2016 at Parma U

2015 - 2018 Member of the teaching board of the PhD school in physics (Parma U).

2015 Invited seminar on General Relativity for high-school students and teachers, Parma (within the event "Nosse Naturam: percorsi storico-epistemologici della Fisica del '900" [Link].

2015 Organizer of a public event celebrating 100 years of General Relativity (Parma, November 20th) http://www2.difest.unipr.it/gr100/.

2014 - 2015 Member of CaJAGWR executive committe, Caltech/JPL. (CaJAGWR is an association of Caltech/JPL scientists and engineers engaged in gravitational-wave research. It sponsors a series of seminars by leading international experts on topics related to gravitational waves.)

2011 Organizer of the conference *Parma workshop on numerical relativity and gravitational waves*, Parma.

Professional services for the LIGO - Virgo collaboration

2021 New waveform infrastructure commitee.

2018 Waveform Mission Team

2017 Invited to co-chair the waveform group (declined)

2017 Paper writing team of GW170817 Testing GR

2017 Paper writing team of GW170817 Kilonova Interpretation

Language skills

Italian (native), English (fluent), German (B1), French (basic).