

Enrico Barausse

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Academic career

- 11/2012 - present: Permanent Staff Researcher (“Chargé de Recherche de classe normale”) at the Institut d'Astrophysique de Paris (CNRS/Sorbonne Universités), France
- November 2011 - October 2012: CITA National Fellow at the University of Guelph and Associate Postdoc at the Perimeter Institute for Theoretical Physics (Canada)
- November 2008 - October 2011: Postdoctoral Research Associate, Maryland Center for Fundamental Physics & Joint Space-Science Institute, Department of Physics, University of Maryland, College Park, USA

Degrees

- October 2008: Ph.D. in Astrophysics, International School for Advanced Studies (SISSA), Trieste, Italy
Supervisors: Prof. Luciano Rezzolla, Prof. John C. Miller
Thesis title “Exploring gravity theories with gravitational waves and compact objects”
(in English, available from www2.iap.fr/users/barausse/phd.pdf)
- June 2004: Laurea degree (MSc) in Physics: 110/110 *cum Laude*, University of Padova, Italy
Supervisors: Prof. Sabino Matarrese, Dr. Antonio Riotto
Thesis title “The backreaction problem in cosmology”
(in Italian, available from www2.iap.fr/users/barausse/tesi.pdf)

Habilitations

- December 2017: “Habilitation à diriger des recherches” (HDR; a habilitation degree to lead research teams), Université Pierre et Marie Curie, Paris, France. Essay title “LISA science in the era of first detections”.
- Italian habilitation (Abilitazione Scientifica Nazionale) to associate professor (theoretical physics in 2014, astrophysics in 2017) and to full professor (astrophysics, in 2018)

Honors and Funding

- DIM ACAV+ 2017 Equipements, PI of XTREMES project (50.000 euros for cluster hardware)
- 2016 “Young Researcher” prize of the Italian Society of General Relativity and Gravitation (SIGRAV)
- Marie Curie Research and Innovation Staff Exchange (RISE) grant “StronGrHEP” (total budget 288.000 euros, of which 49.500 to my group)

- “Prime d’excellence scientifique” (Bonus for excellent scientific research), CNRS, 2014
- Marie Curie Career Integration Grant “Testing galaxy formation with gravitational-wave and X-ray observations of massive black holes” (100.000 euros in support of research expenses for the period 2013-2016)
- CITA National Fellowship at the University of Guelph, Canada (November 2011 - October 2013)
- Humboldt Research Fellowship for Postdoctoral Researchers at the Max Planck Institute for Gravitational Physics – Albert Einstein Institute, Golm, Germany (2012-2014), declined

Publications

About 3800 citations (h-index 37) as of April 2018 according to spires.org. Note that spires.org only accounts for citations from papers in the field of high-energy particle physics, as per their policy. Therefore, the citations to some of my work (which is at the crossroads of theoretical physics, gravitation, and astrophysics) are actually underestimated.

1. E. Barausse, S. Matarrese and A. Riotto,
“The Effect of Inhomogeneities on the Luminosity Distance-Redshift Relation: is Dark Energy Necessary in a Perturbed Universe?”,
Phys. Rev. D **71** (2005) 063537 [arXiv:astro-ph/0501152].
2. T. P. Sotiriou and E. Barausse,
“Post-Newtonian expansion for Gauss-Bonnet Gravity”,
Phys. Rev. D **75** (2007) 084007 [arXiv:gr-qc/0612065].
3. E. Barausse, L. Rezzolla, D. Petroff and M. Ansorg,
“Gravitational waves from extreme mass ratio inspirals in non-pure Kerr spacetimes”,
Phys. Rev. D **75** (2007) 064026 [arXiv:gr-qc/0612123].
4. E. Barausse,
“EMRIs in non-pure Kerr spacetimes”,
AIP Conf. Proc. **873** (2006) 264 [http://digitallibrary.sissa.it/handle/1963/2123].
5. E. Barausse, T. P. Sotiriou and J. C. Miller,
“A no-go theorem for polytropic spheres in Palatini $f(R)$ gravity”,
Class. Quant. Grav. **25** (2008) 062001 [arXiv:gr-qc/0703132].
6. E. Barausse, S. A. Hughes and L. Rezzolla,
“Circular and non-circular nearly horizon-skimming orbits in Kerr spacetimes”,
Phys. Rev. D **76** (2007) 044007 [arXiv:0704.0138 gr-qc].
7. E. Barausse,
“Relativistic dynamical friction in a collisional fluid”,
Mon. Not. Roy. Astron. Soc. **382** (2007) 826 [arXiv:0709.0211 astro-ph].
8. E. Barausse and L. Rezzolla,
“The influence of the hydrodynamic drag from an accretion torus on extreme mass ratio inspirals”,
Phys. Rev. D **77** (2008) 104027 [arXiv:0711.4558 gr-qc].
9. E. Barausse, T. P. Sotiriou and J. C. Miller,
“Curvature singularities, tidal forces and the viability of Palatini $f(R)$ gravity”,
Class. Quant. Grav. **25** (2008) 105008 [arXiv:0712.1141 gr-qc].

10. L. Rezzolla, E. Barausse, E. N. Dorband, D. Pollney, C. Reisswig, J. Seiler and S. Husa, "On the final spin from the coalescence of two black holes", *Phys. Rev. D* **78** (2008) 044002 [arXiv:0712.3541 gr-qc].
11. E. Barausse, T. P. Sotiriou and J. C. Miller, "Polytropic spheres in Palatini $f(R)$ gravity", *EAS Publ. Ser.* **30** (2008) 189 [arXiv:0801.4852 gr-qc].
12. E. Barausse and T. P. Sotiriou, "Perturbed Kerr Black Holes can probe deviations from General Relativity", *Phys. Rev. Lett.* **101** (2008) 099001 [arXiv:0803.3433 gr-qc].
13. E. Barausse and L. Rezzolla, "Predicting the direction of the final spin from the coalescence of two black holes", *Astrophys. J. Lett.* **704** (2009) L40-L44 [arXiv:0904.2577 gr-qc].
14. M. Cook, C. Evoli, E. Barausse, G. L. Granato and A. Lapi, "Two phase galaxy formation: The Gas Content of Normal Galaxies", *Mon. Not. Roy. Astron. Soc.* **402** (2010) 941 [arXiv:0906.4115 astro-ph.GA].
15. M. Cook, E. Barausse, C. Evoli, G. L. Granato and A. Lapi, "Two phase galaxy formation: The evolutionary properties of galaxies", *Mon. Not. Roy. Astron. Soc.* **402** (2010) 2113 [arXiv:0910.3910].
16. E. Barausse, E. Racine and A. Buonanno, "Hamiltonian of a spinning test-particle in curved spacetime", *Phys. Rev. D* **80** (2009) 104025 [arXiv:0907.4745 gr-qc].
17. E. Barausse, "The importance of precession in modelling the direction of the final spin from a black-hole merger", *J. Phys. Conf. Ser.* **228** (2010) 012050 [arXiv:0911.1274 gr-qc].
18. E. Barausse and A. Buonanno, "An improved effective-one-body Hamiltonian for spinning black-hole binaries", *Phys. Rev. D* **81** (2010) 084024 [arXiv:0912.3517 gr-qc].
19. P. Pani, E. Barausse, E. Berti and V. Cardoso, "Gravitational instabilities of superspinars", *Phys. Rev. D* **82** (2010) 044009 [arXiv:1006.1863 gr-qc].
20. E. Barausse, V. Cardoso and G. Khanna, "Test bodies and naked singularities: is the self-force the cosmic censor?", *Phys. Rev. Lett.* **105** (2010) 261102 [arXiv:1008.5159 [gr-qc]].
21. N. Yunes, A. Buonanno, S. A. Hughes, Y. Pan, E. Barausse, M. C. Miller, and W. Thorne, "Extreme Mass Ratio Inspirals within the Effective-One-Body Approach: Quasi-Circular, Equatorial Orbits around a Spinning Black Hole" *Phys. Rev. D* **83** (2011) 044044 [arXiv:1009.6013 [gr-qc]].
22. C. Bambi and E. Barausse, "Constraining the quadrupole moment of stellar-mass black-hole candidates with the continuum fitting method", *Astrophys. J.* **731** (2011) 121 [arXiv:1012.2007 [gr-qc]].

23. E. Barausse, T. Jacobson and T. P. Sotiriou,
“Black holes in Einstein-aether and Horava-Lifshitz gravity”,
Phys. Rev. D **83**, 124043 (2011) [arXiv:1104.2889 [gr-qc]].
24. E. Barausse, V. Cardoso and G. Khanna,
“Testing the Cosmic Censorship Conjecture with point particles: the effect of radiation reaction and the self-force”,
Phys. Rev. D **84** (2011) 104006 [arXiv:1106.1692 [gr-qc]].
25. E. Barausse and A. Buonanno,
“Extending the effective-one-body Hamiltonian of black-hole binaries to include next-to-next-to-leading spin-orbit couplings”,
Phys. Rev. D **84** (2011) 104027 [arXiv:1107.2904 [gr-qc]].
26. C. Bambi and E. Barausse,
“The final stages of accretion onto non-Kerr compact objects”,
Phys. Rev. D **84**, 084034 (2011) [arXiv:1108.4740 [gr-qc]].
27. E. Barausse, A. Buonanno, S. A. Hughes, G. Khanna, S. O’Sullivan and Y. Pan,
“Modeling multipolar gravitational-wave emission from small mass-ratio mergers”,
Phys. Rev. D **85** (2012) 024046 [arXiv:1110.3081 [gr-qc]]
28. A. Le Tiec, E. Barausse and A. Buonanno,
“Gravitational Self-Force Correction to the Binding Energy of Compact Binary Systems”,
Phys. Rev. Lett. **108** (2012) 131103 [arXiv:1111.5609]
29. E. Barausse A. Le Tiec and A. Buonanno,
“The complete non-spinning effective-one-body metric at linear order in the mass ratio”,
Phys. Rev. D **85** (2012) 064010 [arXiv:1111.5610]
30. E. Barausse,
“The evolution of massive black holes and their spins in their galactic hosts”,
Mon. Not. Roy. Astron. Soc. **423** (2012) 2533 [arXiv:1201.5888]
31. A. Taracchini, Y. Pan, A. Buonanno, E. Barausse, M. Boyle, T. Chu, G. Lovelace and H. P. Pfeiffer and M. A. Scheel,
“A prototype effective-one-body model for non-precessing spinning inspiral-merger-ringdown waveforms”,
Phys. Rev. D **86** (2012) 024011 [arXiv:1202.0790]
32. E. Barausse, V. Morozova and L. Rezzolla
“On the mass radiated by coalescing black-hole binaries”,
Astrophys. J. **758** (2012) 63 [arXiv:1206.3803]
33. E. Barausse and T. P. Sotiriou,
“A no-go theorem for slowly rotating black holes in Horava-Lifshitz gravity”,
Phys. Rev. Lett. **109** (2012) 181101, Erratum-ibid. **110** (2013) 039902 [arXiv:1207.6370]
34. E. Barausse and T. P. Sotiriou,
“Slowly rotating black holes in Horava-Lifshitz gravity”,
Phys. Rev. D **87** (2013) 087504 [arXiv:1212.1334]
35. E. Barausse, C. Palenzuela, M. Ponce and L. Lehner,
“Neutron-star mergers in scalar-tensor theories of gravity”,
Phys. Rev. D **87** (2013) 081506(R) [arXiv:1212.5053]

36. P. A. Seoane *et al.* [eLISA Collaboration],
“The Gravitational Universe”,
arXiv:1305.5720.
37. E. Barausse and L. Lehner,
“A Post-Newtonian approach to black hole-fluid systems,”
Phys. Rev. D **88** (2013) 024029 [arXiv:1306.5564]
38. E. Barausse and T. P. Sotiriou,
“Black holes in Lorentz-violating gravity theories,”
invited article for focus issue on astrophysical black holes,
Class. Quant. Grav. **30** (2013) 244010 [arXiv:1307.3359]
39. K. Yagi, D. Blas, N. Yunes and E. Barausse,
“Strong Binary Pulsar Constraints on Lorentz Violation in Gravity,”
Phys. Rev. Lett. **112**, 161101 (2014) [arXiv:1307.6219]
40. C. Palenzuela, E. Barausse, M. Ponce, L. Lehner
“Dynamical scalarization of neutron stars in scalar-tensor gravity theories”
Phys. Rev. D **89**, 044024 (2014) [arXiv:1310.4481]
41. K. Yagi, D. Blas, E. Barausse, N. Yunes
“Constraints on Einstein-aether theory and Horava gravity from binary pulsar observations”
Phys. Rev. D **89**, 084067 (2014) [arXiv:1311.7144]
42. A. Sesana, E. Barausse, M. Dotti, E. M. Rossi
“Linking the spin evolution of massive black holes to galaxy kinematics”
Astrophys. J. **794**, 104 (2014) [arXiv:1402.7088]
43. E. Barausse, V. Cardoso, P. Pani
“Can environmental effects spoil precision gravitational-wave astrophysics?”
Phys. Rev. D **89** (2014) 104059 [arXiv:1404.7149]
44. E. Barausse, V. Cardoso, P. Pani
“Environmental Effects for Gravitational-wave Astrophysics”
J. Phys. Conf. Ser. **610** (2015) 1, 012044 [arXiv:1404.7140]
45. L. Sampson, N. Yunes, N. Cornish, M. Ponce, E. Barausse, A. Klein, C. Palenzuela and L. Lehner,
“Projected Constraints on Scalarization with Gravitational Waves from Neutron Star Binaries”,
Phys. Rev. D **90** (2014) 124091 [arXiv:1407.7038]
46. M. Ponce, C. Palenzuela, E. Barausse and L. Lehner,
“Electromagnetic outflows in scalar-tensor theories vs General Relativity: binary neutron star coalescence”,
Phys. Rev. D **91** (2015) 8, 084038 [arXiv:1410.0638]
47. E. Barausse, J. Bellovary, E. Berti, K. Holley-Bockelmann, B. Farris, B. Sathyaprakash and A. Sesana,
“Massive Black Hole Science with eLISA,”
J. Phys. Conf. Ser. **610** (2015) 1, 012001 [arXiv:1410.2907]
48. E. Berti et al (including E. Barausse),
“Testing General Relativity with Present and Future Astrophysical Observations”
Class. Quant. Grav. **32** (2015) 243001 [arXiv:1501.07274]

49. M. Bonetti, E. Barausse,
“Post-Newtonian constraints on Lorentz-violating gravity theories with a MOND phenomenology”
Phys. Rev. D **91** (2015) 8, 084053 [arXiv:1502.05554]
50. F. Antonini, E. Barausse and J. Silk,
“The imprint of massive black-hole mergers on the correlation between nuclear star clusters and their host galaxies”
Astrophys. J. Lett. **806** (2015) 1, L8 [arXiv:1504.04033]
51. F. Antonini, E. Barausse and J. Silk,
“Co-evolution of nuclear star clusters, massive black holes and their host galaxies”,
Astrophys. J. **812** (2015) 1, 72 [arXiv:1506.02050]
52. E. Barausse, K. Yagi,
“Gravitational-wave emission in shift-symmetric Horndeski theories,”
Phys. Rev. Lett. **115** (2015) 21, 211105 [arXiv:1509.04539]
53. A. Klein, E. Barausse, A. Sesana, A. Petiteau, E. Berti, S. Babak, J. Gair, S. Aoudia, I. Hinder, F. Ohme, B. Wardell,
“Science with the space-based interferometer eLISA. I: Supermassive black hole binaries,”
Phys. Rev. D **93** (2016) 2, 024003 [arXiv:1511.05581]
54. E. Barausse, T. P. Sotiriou, I. Vega,
“Slowly rotating black holes in Einstein-æther theory”,
Phys. Rev. D **93** (2016) 4, 044044 [arXiv:1512.05894]
55. N. Tamanini, C. Caprini, E. Barausse, A. Sesana, A. Klein and A. Petiteau,
“Science with the space-based interferometer eLISA. III: Probing the expansion of the Universe using gravitational wave standard sirens,”
JCAP **1604**, no. 04 (2016) 002 [arXiv:1601.07112]
56. E. Barausse, N. Yunes and K. Chamberlain,
“Theory-Agnostic Constraints on Black-Hole Dipole Radiation with Multi-Band Gravitational-Wave Astrophysics,”
Phys. Rev. Lett. **116** (2016) no.24, 241104 [arXiv:1603.04075].
57. T. Hartwig, M. Volonteri, V. Bromm, R. S. Klessen, E. Barausse, M. Magg and A. Stacy,
“Gravitational Waves from the Remnants of the First Stars,”
Mon. Not. Roy. Astron. Soc. Letters (2016), **460**, L74-L78 [arXiv:1603.05655].
58. M. Bonetti, F. Haardt, A. Sesana and E. Barausse,
“Post-Newtonian Evolution of Massive Black Hole Triplets in Galactic Nuclei: I. Numerical Implementation and Tests,”
Mon. Not. Roy. Astron. Soc. **461** (2016) 4419 [arXiv:1604.08770].
59. F. Hofmann, E. Barausse and L. Rezzolla,
“The final spin from binary black holes in quasi-circular orbits,”
Astrophys. J. Lett. **825** (2016) 2, L19 [arXiv:1605.01938]
60. E. Berti, A. Sesana, E. Barausse, V. Cardoso and K. Belczynski,
“Spectroscopy of Kerr black holes with Earth- and space-based interferometers,”
Phys. Rev. Lett. **117** (2016) no.10, 101102 [arXiv:1605.09286]
61. D. Anderson, N. Yunes and E. Barausse,
“The Effect of Cosmological Evolution on Solar System Constraints and on the Scalarization of

- Neutron Stars in Massless Scalar-Tensor Theories,”
Phys. Rev. D **94**, 104064 (2016) [arXiv:1607.08888]
62. E. Barausse, F. Shankar, M. Bernardi, Y. Dubois and R. K. Sheth,
“Selection bias in dynamically-measured supermassive black hole samples: Scaling relations and correlations between residuals in semi-analytic galaxy formation models”,
Mon. Not. Roy. Astron. Soc. **468** (2017) no.4, 4782 [arXiv:1702.01762]
63. H. Audley *et al.*, “Laser Interferometer Space Antenna,” arXiv:1702.00786
64. I. Dvorkin and E. Barausse,
“The nightmare scenario: measuring the stochastic gravitational-wave background from stalling massive black-hole binaries with pulsar-timing arrays,”
Mon. Not. Roy. Astron. Soc. **470** (2017) 4547 [arXiv:1702.06964]
65. E. Barausse, “Testing the strong equivalence principle with gravitational-wave observations of binary black holes,”
Proceedings of the 3rd International Symposium on “Quest for the Origin of Particles and the Universe”, 5-7 January 2017, Nagoya University, Japan [arXiv:1703.05699]
66. S. Babak, J. Gair, A. Sesana, E. Barausse, C. F. Sopuerta, C. P. L. Berry, E. Berti, P. Amaro-Seoane, A. Petiteau and A. Klein,
“Science with the space-based interferometer LISA. V: Extreme mass-ratio inspirals,”
Phys. Rev. D **95** (2017) no.10, 103012 [arXiv:1703.09722].
67. J. Gair, S. Babak, A. Sesana, P. Amaro-Seoane, E. Barausse, C. P. L. Berry, E. Berti, C. Sopuerta,
“Prospects for observing extreme-mass-ratio inspirals with LISA,”
Proceedings of the 11th International LISA Symposium [arXiv:1704.00009]
68. R. Brito, S. Ghosh, E. Barausse, E. Berti, V. Cardoso, I. Dvorkin, A. Klein and P. Pani,
“Stochastic and resolvable gravitational waves from ultralight bosons,”
Phys. Rev. Lett. **119** (2017) no.13, 131101 [arXiv:1706.05097].
69. R. Brito, S. Ghosh, E. Barausse, E. Berti, V. Cardoso, I. Dvorkin, A. Klein and P. Pani,
“Gravitational wave searches for ultralight bosons with LIGO and LISA”,
Phys. Rev. D **96** (2017) no.6, 064050 [arXiv:1706.06311].
70. M. Bonetti, E. Barausse, G. Faye, F. Haardt and A. Sesana,
“About gravitational-wave generation by a three-body system”,
Class. Quant. Grav. **34**, no. 21, 215004 (2017) [arXiv:1707.04902]
71. M. Bonetti, F. Haardt, A. Sesana and E. Barausse,
“Post-Newtonian evolution of massive black hole triplets in galactic nuclei – II. Survey of the parameter space”,
Mon. Not. Roy. Astron. Soc. **477**, no. 3, 3910–3926 (2018) [arXiv:1709.06088].
72. M. Bonetti, A. Sesana, E. Barausse and F. Haardt,
“Post-Newtonian evolution of massive black hole triplets in galactic nuclei – III. A robust lower limit to the nHz stochastic background of gravitational waves”,
Mon. Not. Roy. Astron. Soc. **477**, no. 2, 2599–2612 (2018) [arXiv:1709.06095]
73. C. Guépin, K. Kotera, E. Barausse, K. Fang and K. Murase,
“Ultra-High Energy Cosmic Rays and Neutrinos from Tidal Disruptions by Massive Black Holes,
Astronomy & Astrophysics in press [arXiv:1711.11274].

74. E. Barausse, R. Brito, V. Cardoso, I. Dvorkin, P. Pani, "The stochastic gravitational-wave background in the absence of horizons", submitted to *Class. Quant. Grav. Letters* [arXiv:1805.08229]
75. V. Korol, E. M. Rossi and E. Barausse, "A multi-messenger study of the Milky Way's stellar disc and bulge with LISA, Gaia and LSST," submitted to *Mon. Not. Roy. Astron. Soc.* arXiv:1806.03306 [astro-ph.GA].
76. L. Barack *et al.*, "Black holes, gravitational waves and fundamental physics: a roadmap," arXiv:1806.05195 [gr-qc].

Seminars and participation in conferences

1. Invited seminar at workshop "From Dark Energy to Bright Synergies" (Sesto Val Pusteria, Italy, July 23-27, 2018), on "Gravitational-wave constraints on ultralight bosons and on black-hole horizons"
2. Invited seminar on "Environmental effects for gravitational wave astrophysics", 21st Capra meeting, Albert Einstein Institute, Potsdam, June 25-29, 2018
3. Invited colloquium on "Physics and astrophysics with mHz gravitational waves" at University of Frankfurt, Germany, June 19, 2018
4. Invited Amaldi seminar on "Physics and astrophysics with mHz gravitational waves" at University of Rome-Sapienza, Italy, May 31, 2018
5. Talk on "A robust lower limit to the nHz stochastic gravitational-wave background", April 20, 2018, at EPTA meeting, Norwich UK.
6. Invited talk on "The quest for low-frequency gravitational waves" on April 17, 2018, at April APS meeting, Columbus OH, USA.
7. Invited talk on "Black holes beyond General Relativity" on January 25, 2018, at workshop "Gravity@Malta 2018", La Valletta, Malta.
8. Invited talk on "The quest for low-frequency gravitational waves" on January 16, 2018 at the University of Rome-Sapienza, Italy.
9. Invited talk on "The quest for low-frequency gravitational waves" on October 25, 2017 at SISSA, Trieste, Italy.
10. Talks on "Stochastic and resolvable gravitational waves from ultralight bosons" and on "Massive black-hole binaries as standard sirens" at the 4th LISA Cosmology Working Group Workshop, 16-20 October 2017 Mainz Institute for Theoretical Physics, Germany.
11. Presentations about "LISA science@IAP" and "Stochastic and resolvable gravitational waves from ultralight bosons" at the Journées LISA France2017, APC, Paris, France, 12 - 13 October 2017.
12. Invited talk at workshop "Probing the dark sector and general relativity at all scales", CERN, Switzerland 14 - 25 August 2017.
13. Invited talk at "New Frontiers in Gravitational-Wave Astrophysics", June 19-22, Rome, Italy. Title "Gravitational waves beyond General Relativity"
14. Public lecture on "The sound of the Universe: detecting gravitational waves in space with LISA", during the "Irish Quantum Foundations 2017 meeting", Dublin (Ireland), 25-26 May 2017.

15. Invited talk at workshop on “The disc migration issue: from protoplanets to supermassive black holes”, Cambridge (UK), 22 - 24 May 2017. Title “Supermassive Black-hole binaries as gravitational wave sources”
16. Invited talk at 7th Iberian Gravitational Wave Meeting, Bilbao (Spain), May 15-17, 2017. Title “Supermassive Black-hole binaries as gravitational wave sources”
17. Cosmology seminar at the University of Geneva (Switzerland), April 21, 2017. Title “Gravitational waves beyond General Relativity”
18. Seminar at the Institut de Physique Théorique, Saclay (France), February 21, 2017. Title “Gravitational waves beyond General Relativity”
19. Talk during “One day workshop on gravitational waves”, Institut d’astrophysique de Paris, January 27, 2017. Title “Testing GR and beyond”
20. KMI theory seminar, Kobayashi-Maskawa Institute, Nagoya (Japan), January 10, 2017. Title “LISA science in the era of first detections”
21. Invited talk at “The 3rd KMI International Symposium on the Quest for the Origin of Particles and the Universe”, Kobayashi-Maskawa Institute, Nagoya (Japan), 5-7 January 2017. Title “The implications of GW detections for GR extensions”
22. Invited seminar at “GW161212: The Universe through gravitational waves, New York, USA”, Simons Center, Stony Brook NY (USA), 12-15 December 2016. Title “The implications of GW detections for GR extensions”
23. Invited seminar at “Gravitational waves and Cosmology – LISA Cosmology Working Group Workshop”, DESY, Hamburg (Germany), 17-21 October 2016. Title “Implications of GW observations for GR extensions”
24. Invited talk at workshop on “Gravitational waves in modified gravity theories”, National Technical University of Athens, Greece, 15–17 September 2016. Title “The implications of GW detections for GR extensions”
25. Invited talk at 22nd meeting of the Italian Society of General Relativity and Gravitational Physics (SIGRAV2016), Cefalù, Italy September 12–18, 2016. Title “The implications of GW detections for GR extensions”
26. Invited talk at day on the “Presentation of the L3 mission” (organized by LISA France). July 5, 2016. Title “eLISA science in the era of first detections”
27. Talk at the “19th Capra Meeting on Radiation Reaction in General Relativity”, Meudon, France. June 27 - July 1, 2016. Title “eLISA science in the era of first detections”
28. Invited talk at “2016 Gravitational Wave Physics and Astronomy Workshop (GWPAW 2016)”, Hyannis (MA), USA. June 15-18, 2016. Title “eLISA science in the era of first detections”
29. Invited talk at conference on “The first observation of a binary black hole merger: Status and future prospects”, Albert Einstein Institute, Hannover (Germany). May 23-26, 2016. Title “Theoretical implications of gravitational-wave observations”
30. Talk at the University of Padova, Italy, April 21, 2016. Title “Lorentz-violations in gravity and in cosmology”

31. Talk at the University of Milan-Bicocca, Italy, April 12, 2016.
Title "eLISA science in the era of first detections"
32. Invited talk at conference on "Current Problems in Theoretical Physics, XII Edition", March 18-23, 2016, Vietri sul Mare, Italy.
Title "eLISA science in the era of first detections"
33. "Gravity and Geometry" seminar, School of Mathematical Sciences, University of Nottingham (UK), January 20, 2016.
Title "Gravitational-wave emission and pulsar constraints in shift-symmetric Horndeski theories"
34. Gravity and Cosmology seminar at LPT (Laboratoire Physique Theorique), Orsay, France, November 18, 2015.
Title "Gravitational-wave emission in shift-symmetric Horndeski theories"
35. Theory group seminar at AstroParticle and Cosmology (APC) laboratory, Paris, France, October 20, 2015
Title "Gravitational-wave emission in shift-symmetric Horndeski theories"
36. Invited talk at Miniworkshop "Gravitation and scalar fields", Observatoire de Paris - Meudon, October 6, 2015.
Title "Gravitational-wave emission in shift-symmetric Horndeski theories"
37. Invited talk at the "Extreme Gravity Workshop", Montana State University, Bozeman, United States, August 20-22, 2015
Title "Should we bother about strong field gravity?"
38. Invited talk at the "27th International Symposium on Lepton Photon Interactions at High Energies", Ljubljana, Slovenia, August 17-22, 2015
Title "Exploring the Universe with Gravitational Waves"
39. Invited talk at "GPhys day", Observatoire de Paris, July 6th, 2015
Title "Why bother about strong-field gravity? The example of Lorentz-violating gravity theories"
40. Invited seminar at the Astronomy Centre, University of Sussex, June 5th, 2015
Title "Black-hole spins as gravitational and cosmological probes"
41. Invited seminar at the University of Aveiro, Portugal, June 2nd, 2015
Title "Black-hole spins as gravitational and cosmological probes"
42. Invited seminar at the Max Planck Institute for Gravitational Physics (Albert Einstein Institute, Golm, Germany), May 27, 2015
Title "Lorentz violations in gravity and cosmology"
43. Invited talk at "Fourth COSPA Meeting", Mons, Belgium, May 20, 2015,
Title "Black-holes spins as gravitational and cosmological probes"
44. Invited talk at "eLISA Cosmology Working Group Workshop", CERN, Geneva, Switzerland, 14-17 April, 2015
Title "Testing gravity theories with gravitational waves and compact objects: the case of Lorentz violating gravity"
45. Invited talk at "Mini-workshop on gravity and cosmology", Institut d'Astrophysique de Paris, February 24 - 27, 2015
Title "Lorentz violations in gravity and cosmology"

46. LPT Orsay (France), invited talk at workshop on gravity theories, November 17-18, 2014.
Title "Astrophysical consequences of Lorentz violations in gravity"
47. Osaka University Theoretical Astrophysics Colloquium, Osaka (Japan), June 5, 2014.
Title "Compact objects as probes of astrophysics, gravity and fundamental physics"
48. Talk at the Yukawa Institute for Theoretical Physics, Kyoto (Japan), June 2, 2014, as part of a long term workshop on "Holographic vistas on Gravity and Strings";
Title "Astrophysical consequences of Lorentz violations in gravity"
49. Invited talk at the 10th International LISA Symposium, Gainesville FL (USA), May 18-23, 2014,
Title "Black-hole spins as gravitational and cosmological probes"
50. Seminar at the University of Milan Bicocca, Milan (Italy), May 8, 2014,
Title "Astrophysical consequences of Lorentz violations in gravity"
51. Gravitational Physics Seminars at the University of Cardiff, April 11, 2014,
Title "Astrophysical consequences of Lorentz violations in gravity"
52. Invited seminar at the 558th WE-Heraeus-Seminar on "The Strong Gravity Regime of Black Holes and Neutron Star", Bad Honnef (Germany), March 31 to April 4, 2014,
Title "Astrophysical consequences of Lorentz violations in gravity"
53. Physics Department Seminar at the University of Trento, Italy, March 19, 2014,
Title "Compact objects as probes of astrophysics, gravity and fundamental physics"
54. CEA-Saclay, Astrophysics Institute Colloquium (Séminaire SA), March 11, 2014,
Title "Compact objects as probes of astrophysics, gravity and fundamental physics"
55. IAP Seminar, Institut d'Astrophysique de Paris, March 7, 2014,
Title "Compact objects as probes of astrophysics, gravity and fundamental physics"
56. Invited talk at workshop on "The structure of gravity and spacetime", University of Oxford (UK), February 6-7, 2014,
Title "Astrophysical consequences of Lorentz violations in gravity"
57. Invited talk at workshop on "Testing General Relativity with Astrophysical Observations", University of Mississippi, Oxford MS (USA), January 6-10, 2014
Title "Astrophysical consequences of Lorentz violations in gravity"
58. Invited talk at Virtual Institute of Astroparticle Physics (Online seminar platform hosted at the CNRS AstroParticle and Cosmology (APC) laboratory, Paris, France; <http://viavca.in2p3.fr>), November 8, 2013,
Title "Strong Binary Pulsar Constraints on Lorentz Violation in Gravity"
59. Invited talk at the National Conference of the Italian Physical Society, Trieste (Italy), September 27, 2013
Title "Neutron-star mergers in scalar-tensor theories of gravity"
60. Invited Quantum gravity seminar at Perimeter Institute, Waterloo (Canada), August 22, 2013
Title "Strong Binary Pulsar Constraints on Lorentz Violation in Gravity"
61. Colloquium at Perimeter Institute, Waterloo (Canada), June 7, 2013
Title "Spinning black-hole binaries as gravitational and cosmological probes"

62. Colloquium at the University of Guelph (Canada), June 5, 2013.
Title "The sound of the Universe: probing astrophysics, cosmology and fundamental physics with gravitational waves"
63. Invited talk at the CNRS AstroParticle and Cosmology (APC) laboratory, Paris, France, May 7, 2013
Talk title "Neutron-star mergers in scalar-tensor theories of gravity"
64. Talk at NASA's Goddard Space Flight Center (US), April 19, 2013
Talk title "Spinning black-hole binaries as gravitational and cosmological probes"
65. Invited Strong Gravity Seminar at Perimeter Institute, Waterloo (Canada), April 11, 2013
Title "Spinning black-hole binaries as gravitational and cosmological probes"
66. Gravity seminar, University of Southampton (UK), March 14, 2013
Talk title "Neutron-star mergers in scalar-tensor theories of gravity"
67. Invited talk at the "Strong Gravity beyond GR" workshop, Lisbon, Portugal, March 5 - 8, 2013
Talk title "Neutron-star mergers in scalar-tensor theories of gravity"
68. 13th Marcel Grossmann Meeting, Stockholm, Sweden, July 1 - 7, 2012.
Talk titles "The complete non-spinning effective-one-body metric at linear order in the mass ratio"
"Test bodies and naked singularities: is the self-force the cosmic censor?"
"The effective-one-body model for spinning black-hole binaries"
69. Relativity and Gravitation, 100 Years after Einstein in Prague, June 25 - 29, 2012, Prague, Czech Republic.
Talk title "The complete non-spinning effective-one-body metric at linear order in the mass ratio"
70. Astrophysics Colloquium at SISSA, Trieste, Italy, May 15, 2012.
Title "The evolution of the spins of massive black holes"
71. Invited seminar at the Multidisciplinary Center of Astrophysics (CENTRA), Lisbon, Portugal, May 8, 2012.
Title "The evolution of the spins of massive black holes"
72. Invited seminar at the Multidisciplinary Center of Astrophysics (CENTRA), Lisbon, Portugal, May 3, 2012.
Title "Gravitational Self-Force Correction to the Binding Energy of Compact Binary Systems"
73. Invited seminar at the Canadian Institute for Theoretical Astrophysics (CITA), Toronto, April 12, 2012.
Title "The evolution of the spins of massive black holes"
74. Capra meeting, Southampton (UK), July 5, 2011.
Talk title "Test bodies and naked singularities: is the self-force the cosmic censor?"
75. Gravity Theory Seminar at the University of Maryland, April 13, 2011.
Title "Test bodies and naked singularities: is the self-force the cosmic censor?"
76. GReCO seminar at the Institut d'Astrophysique de Paris, April 6, 2011.
Title "Test bodies and naked singularities: is the self-force the cosmic censor?"
77. Invited talk at "IPMU Workshop on Black Holes", Kashiwa, Japan, 21 - 25 February 2011.
Title "Test bodies and naked singularities: is the self-force the cosmic censor?"
78. Capra-NRDA, Perimeter Institute, Waterloo, Canada, June 26, 2010.
Talk title "A new effective-one-body model for spinning black-hole binaries"

79. Seminar at the Astronomy Department, University of Maryland, June 14, 2010.
Title "Gravitational instabilities of superspinars"
80. Invited seminar at the Institute for the Physics and Mathematics of the Universe (IPMU), Kashiwa, Japan, May 28, 2010.
Title "Understanding black-hole binaries: a phenomenological approach"
81. Physics colloquium at the University of Mississippi, Oxford, MS, April 6, 2010.
Title "Hamiltonian of a spinning test-particle in curved spacetime"
82. "April" APS Meeting, Washington DC, February 14, 2010.
Talk title "Hamiltonian of a spinning test-particle in curved spacetime"
83. Astrophysics seminar at the University of Tuebingen, Germany, January 14, 2010.
Title "Understanding black-hole binaries: a phenomenological approach"
84. Gravity Theory Seminar at the University of Maryland, November 16, 2009.
Title "Hamiltonian of a spinning test-particle in curved spacetime"
85. 8th Amaldi Conference on Gravitational Waves, June 21-26, 2009, New York (USA).
Talk title "Predicting the final spin from the coalescence of two black holes"
86. LISA Astro-GR at Como-Milano, 6-8 February 2008, Como (Italy).
Talk title "Can we see an accretion torus with EMRIs?"
87. Invited seminar at the Relativity Group at the University of Southampton (United Kingdom), 15 November 2007.
Title "The effect of the hydrodynamic drag from an accretion torus on extreme mass-ratio inspirals"
88. 30th Spanish relativity Meeting, 10 - 14 September 2007, Tenerife (Spain).
Talk title "A no-go theorem for polytropic spheres in Palatini $f(R)$ gravity"
89. 18th International Conference on General Relativity & Gravitation and 7th Edoardo Amaldi Conference on Gravitational Waves, 8 - 14 July 2007, Sydney (Australia).
Talk title "A no-go theorem for polytropic spheres in Palatini $f(R)$ gravity"
90. 13th Conference on present problems in theoretical physics, 30 March - 4 April 2007, Vietri Sul Mare (Italy).
Talk title "Extreme mass ratio inspirals in non-Kerr spacetimes"
91. LISA Astro-GR at the Albert Einstein Institute, 18 - 22 September 2007, Potsdam (Germany).
Talk title "Extreme mass ratio inspirals in non-Kerr spacetimes"
92. 6th International LISA Symposium, 19 - 23 June 2006, Greenbelt (USA).
Poster title "Extreme mass ratio inspirals in non-Kerr spacetimes"
93. Seminar at the Numerical Relativity Group at the Albert Einstein Institute, 3 February 2006, Potsdam (Germany).
Title "Extreme Mass Ratio Inspirals in Quasi-Kerr Spacetimes"
94. 8th Capra Meeting on radiation reaction, 11 - 14 July 2005, Abingdon (United Kingdom).
95. ICTP Summer School on Particle Physics, 13 - 24 June 2005, Trieste (Italy).
96. Italian National School of Astrophysics (7th cycle, 4th course) on Cosmology - Extrasolar planets, 5 - 11 September 2004, Asiago (Italy).

Teaching experience

- Graduate-level lectures on gravitational waves at SISSA (8 hours), Italy, March 2018
- IAP course on “Gravitational waves” (8 hours, March 2018)
- Graduate-level lectures on gravitational waves at SISSA (8 hours), Italy, March 2017
- Lectures on “Gravitational waves” at the 4th CNRS School of Astroparticle Physics, Observatoire de Haute-Provence, Saint Michel l’Observatoire, France, May 27- June 1, 2013
http://www.cpt.univ-mrs.fr/~cosmo/WEB_EAP_13/EcoleAP-0HP13.html
- Graduate-level lectures on black holes at SISSA (8 hours), Italy, 2-5 December 2013

Student/Postdoc supervision

- July-September 2014: internship project with a Master student (Z. Belkhadria) from the University of Paris VI, on “Cosmological evolution equations in Lorentz-violating gravity”
- December 2013-October 2014: Master thesis project with M. Bonetti (University of Milan Bicocca, Italy) on “Modified Newtonian dynamics from boost-invariance violations in gravity: the strong coupling problem and its implications for observational tests”
- January 2015 - March 2015: internship project with a Master student (T. Torres) from the University of Paris VII, on “Cosmology in Lorentz-violating gravity”
- September 2015 - January 2016: internship project on “Visualization of hierarchical structure formation”, with 3rd year Maths student at the University of Manchester (L. Ward), visiting Paris under the Erasmus program
- January 2016 - June 2016: supervision of W. Gharbi (undergraduate student at Centrale-Supelec, Paris, enrolled in an excellence curriculum combining study and research)
- January 2015-July 2016: project with D. Anderson (PhD student at Montana State University) on “Cosmological constraints on scalar-tensor theories”
- From January 2015, ongoing: project with M. Bonetti (PhD student at the University of Como, Italy) on “The dynamics of triple massive black-hole systems”
- From October 2015, ongoing: PhD supervision of O. Ramos, with project on “Effects of Lorentz violations in gravity and cosmology”
- From August 2016, ongoing: supervision of A. Klein, CNES postdoctoral fellow at IAP
- May-July 2017: supervision of N. Gupta (student at Indian Institute of Technology Kharagpur) during summer project on “Multi-band gravitational-wave astronomy with LIGO and LISA”

Organization of seminars and conferences

- Upcoming: workshop on “Fundamental Physics with LISA”, Galileo Galilei Institute, Firenze, Italy, November 12–14 2018.
- 34th IAP Conference on “Massive black holes in evolving galaxies: from quasars to quiescence”, Institut d’Astrophysique de Paris, June 25-29, 2018

- The “Strong Gravity Universe” workshop, Sao Miguel (Azoras), July 3–7, 2017.
- The Era of Gravitational-Wave Astronomy, XXXIIIth International Colloquium of the Institut d’Astrophysique de Paris, June 2017
- Workshop on “Gravity and Experiment”. Paris, December 5 – 9, 2016.
- GRAMPA (GRavitational-wave Astronomy Meeting in PARis), August 29 – September 2, 2016
- February 2 – 6, 2015: 55-participant workshop at the Lorentz Center (Leiden, Netherlands) on “Compact Objects as Astrophysical and Gravitational Probes”
- February 2013 – October 2014: Organization of the weekly “General Relativity and Cosmology” seminars at the Institut d’Astrophysique de Paris

Journal refereeing: Physical Review D, Physical Review X, Physical Review Letters, Classical and Quantum Gravity, Monthly Notices of the Royal Astronomical Society, Astrophysical Journal, Physics Letters A, Physics Letters B, Astronomy and Astrophysics, Journal of Cosmology and Astroparticle Physics, Foundations of Physics, General Relativity and Gravitation, European Physical Journal C, European Journal of Physics, International Journal of Modern Physics D, Physics of the Dark Universe

Referee for supercomputing proposals: Ohio Supercomputer Center

Reviewer for funding agencies: Netherlands Organisation for Scientific Research (NWO), Natural Sciences and Engineering Research Council of Canada (NSERC), PRIN program of the MIUR (Ministry of Education and Research, Italy), Rita Levi Montalcini fellowships (Italy), FNRS (Belgium), Royal Society (UK), Research Grants Council (RGC, Hong Kong)

Consultancy: The Implementation Group, Inc.

International collaborations: Member of the LISA consortium (full member and part of the LISA Science Group); member of the European Pulsar Timing Array (EPTA) collaboration

Citations in blogs and press

- At least twelve news stories about my work on ultralight bosons: <https://aps.altmetric.com/details/26661330/news>
- BBC radio program on the GRAMPA 2016 meeting I organized in Paris
<http://www.bbc.co.uk/programmes/b07q2dg8#play>, <http://www.bbc.co.uk/programmes/p0460fgv>
- Discovery of Gravitational Waves – What Comes Next
http://www.spacedaily.com/reports/Discovery_of_Gravitational_Waves___What_Comes_Next_999.html
- Gravitational physics poised for new era of discovery,
<http://phys.org/news/2016-06-gravitational-physics-poised-era-discovery.html>,
<http://www.montana.edu/news/16242/gravitational-physics-poised-for-new-era-of-discovery>
- MSU Physicist Advances Our Understanding of Nature,
<http://kmmam.com/msu-physicist-advances-our-understanding-of-nature>
- Rachel Courtland, Superhero move may save black holes from nakedness, New Scientist (2010), www.newscientist.com/article/dn19899-superhero-move-may-save-black-holes-from-nakedness.html

- Naked singularities have permanent clothes, <http://physicsbuzz.physicscentral.com/2010/12/naked-singularities-have-permanent.html>

Online outreach articles

- Black holes hold their breath... and dodge the bullet, "The photon – UMD Physics Newsletter", February 2011, www.umdphysics.umd.edu/images/photon/2011/februaryphoton.pdf
- Binary pulsars vs absolute time : the final battle, April 2014, www.iap.fr/actualites/avoir/2014/Avril/EnricoBarausse.html

References

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