

Alexandre Le Tiec

Curriculum Vitæ

Observatoire de Paris
5 place Jules Janssen
92190 Meudon | France
+33 1 45 07 74 41
letiec@obspm.fr
letiec.yolasite.com

Academic Employment

- 2013–.... **CNRS Research Scientist** (tenured position), *Laboratoire Univers et Théories*, Observatoire de Paris, Meudon, France.
- 2011–2013 **MCFP Prize Fellow**, *Maryland Center for Fundamental Physics*, Department of Physics, University of Maryland, College Park MD, USA.
- 2010–2011 **Research Associate**, *Maryland Center for Fundamental Physics*, Department of Physics, University of Maryland, College Park MD, USA.

Education

- 2007–2010 **Ph.D. in Physics**, *Université Pierre et Marie Curie*, Paris, France, *with highest honors*.
Thesis title: *Coalescing black hole binaries in general relativity & The dark matter problem in astrophysics*; Advisor: Luc Blanchet, Institut d’Astrophysique de Paris.
- 2006–2007 **M2 in Astrophysics**, *Observatoire de Paris*, France, *with highest honors, valedictorian*.
Equivalent to a second-year Master’s degree.
- 2005–2006 **Aggrégation of Physics**, *École Normale Supérieure de Cachan*, France.
Awarded highest French national teaching certification following competitive exams and year-long intensive preparation.
- 2004–2005 **M1 in Physics**, *Université Pierre et Marie Curie*, Paris, France, *with high honors*.
Equivalent to a first-year Master’s degree.
- 2003–2004 **Licence in Physics**, *Université Pierre et Marie Curie*, Paris, France, *with high honors*.
Equivalent to a Bachelor’s degree.

Fellowships & Awards

- Mar. 2019 *Bronze Medal* of the French National Center for Scientific Research.
- May 2014 *Marie Curie Career Integration Grant* from the European Commission.
- Aug. 2013 *Chandrasekhar Award* of the International Society on General Relativity and Gravitation.
- Jan. 2012 *Maryland Center for Fundamental Physics Postdoctoral Prize Fellowship*.
- Feb. 2010 Nominated then selected to participate to the 60th *Lindau Nobel Laureate Meeting*.
- 2007–2010 Three-year long fellowship from the French government as a doctoral student.
- 2003–2007 Four-year long fellowship from the French government as a student of the *École Normale Supérieure de Cachan* (admitted following national competitive entrance exams).

Research Interests

Gravitational radiation, black holes, neutron stars, general relativistic orbital dynamics
Approximation methods in general relativity, post-Newtonian theory, self-force theory
Relativistic astrophysics and cosmology, dark matter, dark energy
Anthropocene, Great Acceleration, global catastrophic risks

Publication List

Peer-reviewed publications

31. *Gravitational waveforms for compact binaries from second-order self-force theory*,
B. Wardell, A. Pound, N. Warburton, J. Miller, L. Durkan & A. Le Tiec,
Phys. Rev. Lett. **130**, 241402 (2023), arXiv:2112.12265 [gr-qc]
30. *First law of mechanics for spinning compact binaries: dipolar order*,
P. Ramond & A. Le Tiec,
Phys. Rev. D **106**, 044057 (2022) arXiv:2202.09345 [gr-qc]
29. *Tidal Love numbers of Kerr black holes*,
A. Le Tiec, M. Casals & E. Franzin,
Phys. Rev. D **103**, 084021 (2021), arXiv:2010.15795 [gr-qc]
28. *Spinning black holes fall in Love*,
A. Le Tiec & M. Casals,
Phys. Rev. Lett. **126**, 131102 (2021), arXiv:2007.00214 [gr-qc]
27. *Multipolar particles in helically symmetric spacetimes*,
P. Ramond & A. Le Tiec,
Class. Quantum Grav. **38**, 135022 (2021), arXiv:2005.00602 [gr-qc]
26. *Gravitational waves from bodies orbiting the Galactic center black hole and their detectability by LISA*,
E. Gourgoulhon, A. Le Tiec, F. H. Vincent & N. Warburton,
Astron. Astrophys. **627**, A92 (2019), arXiv:1903.02049 [gr-qc]
25. *SAGE: finding IMBH in the black hole desert*,
S. Lacour, F. H. Vincent, M. Nowak, A. Le Tiec et al.,
Class. Quantum Grav. **36**, 195005 (2019), arXiv:1811.04743 [gr-qc]
24. *Horizon surface gravity in corotating black hole binaries*,
A. Le Tiec & P. Grandclément,
Class. Quantum Grav. **35**, 144002 (2018), arXiv:1710.03673 [gr-qc]
23. *First law of compact binary mechanics with gravitational-wave tails*,
L. Blanchet & A. Le Tiec,
Class. Quantum Grav. **34**, 164001 (2017), arXiv:1702.06839 [gr-qc]
22. *Hamiltonian formulation of the conservative self-force dynamics in the Kerr geometry*,
R. Fujita, S. Isoyama, A. Le Tiec, H. Nakano, N. Sago & T. Tanaka,
Class. Quantum Grav. **34**, 134001 (2017), arXiv:1612.02504 [gr-qc]

21. *First law of mechanics for compact binaries on eccentric orbits,*
A. Le Tiec,
Phys. Rev. D **92**, 084021 (2015), arXiv:1506.05648 [gr-qc]
20. *Comparison between self-force and post-Newtonian dynamics: beyond circular orbits,*
S. Akcay, A. Le Tiec, L. Barack, N. Sago & N. Warburton,
Phys. Rev. D **91**, 124014 (2015), arXiv:1503.01374 [gr-qc]
19. *The overlap of numerical relativity, perturbation theory and post-Newtonian theory in the binary black hole problem,*
A. Le Tiec,
Int. J. Mod. Phys. D **23**, 1430022 (2014), arXiv:1408.5505 [gr-qc]
18. *Gravitational self-force correction to the innermost stable circular equatorial orbit of a Kerr black hole,*
S. Isoyama, L. Barack, S. R. Dolan, A. Le Tiec et al.,
Phys. Rev. Lett. **113**, 161101 (2014), arXiv:1404.6133 [gr-qc]
17. *Gravitational self-torque and spin precession in compact binaries,*
S. R. Dolan, N. Warburton, A. I. Harte, A. Le Tiec et al.,
Phys. Rev. D **89**, 064011 (2014), arXiv:1312.0775 [gr-qc]
16. *A note on celestial mechanics in Kerr spacetime,*
A. Le Tiec,
Class. Quantum Grav. **31**, 097001 (2014), arXiv:1311.3836 [gr-qc]
15. *Periastron advance in spinning black hole binaries: gravitational self-force from numerical relativity,*
A. Le Tiec, A. Buonanno, A. H. Mroué, H. P. Pfeiffer et al.,
Phys. Rev. D **88**, 124027 (2013), arXiv:1309.0541 [gr-qc]
14. *Thermodynamics of a black hole with moon,*
S. E. Gralla & A. Le Tiec,
Phys. Rev. D **88**, 044021 (2013), arXiv:1210.8444 [gr-qc]
13. *First law of mechanics for black hole binaries with spins,*
L. Blanchet, A. Buonanno & A. Le Tiec,
Phys. Rev. D **87**, 024030 (2013), arXiv:1211.1060 [gr-qc]
12. *Non-Gaussianity in the cosmic microwave background induced by dipolar dark matter,*
L. Blanchet, D. Langlois, A. Le Tiec & S. Marsat,
JCAP **1302**, 022 (2013), arXiv:1210.4106 [gr-qc]
11. *Spacetime symmetries and Kepler's third law,*
A. Le Tiec,
Class. Quantum Grav. **29**, 217002 (2012), arXiv:1202.2893 [gr-qc]
10. *Complete nonspinning effective-one-body metric at linear order in the mass ratio,*
E. Barausse, A. Buonanno & A. Le Tiec,
Phys. Rev. D **85**, 064010 (2012), arXiv:1111.5610 [gr-qc]
9. *Gravitational self-force correction to the binding energy of compact binary systems,*
A. Le Tiec, E. Barausse & A. Buonanno,
Phys. Rev. Lett. **108**, 131103 (2012), arXiv:1111.5609 [gr-qc]

8. *First law of binary black hole mechanics in general relativity and post-Newtonian theory,*
A. Le Tiec, L. Blanchet & B. F. Whiting,
Phys. Rev. D **85**, 064039 (2012), arXiv:1111.5378 [gr-qc]
7. *Periastron advance in black-hole binaries,*
A. Le Tiec, A. H. Mroué, L. Barack, A. Buonanno et al.,
Phys. Rev. Lett. **107**, 141101 (2011), arXiv:1106.3278 [gr-qc]
6. *High-order post-Newtonian fit of the gravitational self-force for circular orbits in the Schwarzschild geometry,*
L. Blanchet, S. Detweiler, A. Le Tiec & B. F. Whiting,
Phys. Rev. D **81**, 084033 (2010), arXiv:1002.0726 [gr-qc]
5. *The gravitational-wave recoil from the ringdown phase of coalescing black hole binaries,*
A. Le Tiec, L. Blanchet & C. M. Will,
Class. Quantum Grav. **27**, 012001 (2010), arXiv:0910.4594 [gr-qc]
4. *The close-limit approximation for black hole binaries with post-Newtonian initial conditions,*
A. Le Tiec & L. Blanchet,
Class. Quantum Grav. **27**, 045008 (2010), arXiv:0910.4593 [gr-qc]
3. *Post-Newtonian and numerical calculations of the gravitational self-force for circular orbits in the Schwarzschild geometry,*
L. Blanchet, S. Detweiler, A. Le Tiec & B. F. Whiting,
Phys. Rev. D **81**, 064004 (2010), arXiv:0910.0207 [gr-qc]
2. *Dipolar dark matter and dark energy,*
L. Blanchet & A. Le Tiec,
Phys. Rev. D **80**, 023524 (2009), arXiv:0901.3114 [astro-ph.CO]
1. *Model of dark matter and dark energy based on gravitational polarization,*
L. Blanchet & A. Le Tiec,
Phys. Rev. D **78**, 024031 (2008), arXiv:0804.3518 [astro-ph]

White papers

4. *Waveform modelling for the Laser Interferometer Space Antenna,*
LISA Consortium Waveform Working Group,
Submitted to Living Rev. Relativ. (2023), arXiv:2311.01300 [gr-qc]
3. *Prospects for fundamental physics with LISA,*
E. Barausse, E. Berti, T. Hertog, S. A. Hughes et al.,
Gen. Rel. Grav. **52**, 81 (2020), arXiv:2001.09793 [gr-qc]
2. *Black holes, gravitational waves and fundamental physics: a roadmap,*
L. Barack, V. Cardoso, S. Nissanke, T. P. Sotiriou et al.,
Class. Quantum Grav. **36**, 143001 (2019), arXiv:1806.05195 [gr-qc]
1. *French SKA white book: the French community towards the Square Kilometre Array,*
F. Acero, J.-T. Acquaviva, R. Adam, N. Aghanim et al.,
Editor in chief: C. Ferrari (2017), arXiv:1712.06950 [astro-ph.IM]

Chapters in books

2. *Theory of gravitational waves,*
A. Le Tiec & J. Novak,
In *An Overview of Gravitational Waves: Theory, Sources and Detection*
(G. Auger & E. Plagnol Eds.), World Scientific (2017), arXiv:1607.04202 [gr-qc]
1. *High-accuracy comparison between the post-Newtonian and self-force dynamics of black-hole binaries,*
L. Blanchet, S. Detweiler, A. Le Tiec & B. F. Whiting,
In *Mass and Motion in General Relativity* (L. Blanchet, A. Spallicci & B. Whiting Eds.),
Fundamental Theories of Physics, Vol. 162, Springer (2011), arXiv:1007.2614 [gr-qc]

Conference proceedings

4. *SAGE: using CubeSats for gravitational wave detection,*
S. Lacour, M. Nowak, P. Bourget, F. Vincent et al.,
Proceedings of the SPIE, Volume 10699 (2018), arXiv:1806.08106 [astro-ph.IM]
3. *Dipolar dark matter and cosmology,*
L. Blanchet, D. Langlois, A. Le Tiec & S. Marsat,
Proceedings of the conference “Hot topics in general relativity and gravitation” (J. Dumarchez & R. Triay Eds.), The Gioi Publishers (2013), arXiv:1312.6991 [astro-ph.CO]
2. *Perturbative, post-Newtonian, and general relativistic dynamics of black hole binaries,*
A. Le Tiec,
Proceedings of the “46^e rencontres de Moriond” (E. Augé, J. Dumarchez & J. Trần Thanh Vân Eds.), The Gioi Publishers, p. 81 (2011), arXiv:1109.6848 [gr-qc]
1. *Phenomenology of the modified Newtonian dynamics and the concordance cosmological scenario,*
L. Blanchet & A. Le Tiec,
Proceedings of the “43^e rencontres de Moriond” (J. Dumarchez, Y. Giraud-Héraud & J. Trần Thanh Vân Eds.), The Gioi Publishers, p. 257 (2009), arXiv:0807.1200 [astro-ph]

Theses

2. *Black hole physics and relativistic celestial mechanics,*
A. Le Tiec,
Habilitation à diriger des recherches, Observatoire de Paris (2021)
1. *Coalescing black hole binaries in general relativity & The dark matter problem in astrophysics,*
A. Le Tiec,
Ph.D. Thesis, Université Pierre et Marie Curie (2010)

Invited Talks

Conference talks

July 2023 **41st SPP Physics Conference**, Del Carmen, Siargao Island, Philippines.
Tidal deformations of black holes.

- Dec. 2022 **Mathematical Aspects of Black Hole Theory**, Observatoire de Paris, Meudon, France.
Black hole Love harmonies.
- June 2022 **Peyresq Physics 2022: Micro and Macro Structure of Spacetime**, Peyresq, France.
The shape of black hole Love.
- Dec. 2021 **Atelier Théorie, Univers et Gravitation**, Institut Henri Poincaré, Paris, France.
Recent developments on gravitational-wave science.
- Dec. 2021 **GdR Ondes Gravitationnelles**, Institut de Physique Théorique, CEA Saclay, France.
Gravitational waveforms for intermediate mass ratio inspirals.
- Aug. 2020 **Workshop on Rethinking the Relativistic 2-Body Problem**, AEI, Potsdam, Germany.
First laws of compact binary mechanics.
- Oct. 2018 **Journées Théorie PNHE**, Institut d’Astrophysique de Paris, France.
Quelles perspectives théoriques pour l’astrophysique des ondes gravitationnelles?
- Jan. 2018 **Gravity@Malta 2018**, University of Malta, Valletta, Malta.
Post-Newtonian and post-Minkowskian approximations.
- June 2017 **International Pulsar Timing Array 2017**, CIEP, Sèvres, France.
General relativistic dynamics of binary black holes.
- June 2017 **20th Capra Meeting on Radiation Reaction**, U of North Carolina, Chapel Hill NC, USA.
The laws of binary black hole mechanics: an update.
- Dec. 2016 **Workshop on Analytical Methods in General Relativity**, ICTP, São Paulo, Brazil.
Hamiltonian dynamics, first laws of binary mechanics, and innermost stable orbits.
- July 2015 **14th Marcel Grossmann Meeting (session BN7)**, La Sapienza University, Rome, Italy.
The overlap of numerical relativity, perturbation theory and post-Newtonian theory in the binary black hole problem.
- July 2015 **14th Marcel Grossmann Meeting (session BN5)**, La Sapienza University, Rome, Italy.
Orbital dynamics of eccentric compact binaries.
- July 2015 **18th Capra Meeting on Radiation Reaction**, YITP, Kyoto University, Kyoto, Japan.
Orbital dynamics of eccentric compact binaries.
- June 2015 **Journées SF2A 2015**, Université Paul Sabatier, Toulouse, France.
100 ans de relativité générale et 99 ans d’ondes gravitationnelles.
- May 2015 **Focus Program on 100 Years of General Relativity**, Fields Institute, Toronto, Canada.
The laws of binary black hole mechanics.
- Mar. 2015 **50th Rencontres de Moriond & GRAM Colloquium**, Planibel Hotel, La Thuile, Italy.
Gravitational self-force correction to the innermost stable circular orbit of a Kerr black hole.
- July 2014 **Cherenkov Telescope Array Workshop**, Observatoire de Paris, France.
Gravitational waves.
- June 2014 **17th Capra Meeting on Radiation Reaction**, Caltech, Pasadena CA, USA.
The laws of binary black hole mechanics.
- Feb. 2014 **Kinosaki Joint Camp**, KKR Kinosaki-Genbu Hotel, Kinosaki, Japan.
GR@99: revisiting the classical tests with compact binaries.
- Dec. 2013 **Journée du LUTH**, Observatoire de Meudon, France.
Gravitational waves from coalescing binary black holes and neutron stars.
- Nov. 2013 **Meeting on CTA and TeV science at OP**, Observatoire de Meudon, France.
Synergy with gravitational waves (with Jérôme Novak).

- Oct. 2012 **KITP Workshop “Chirps, Mergers and Explosions”, UC Santa Barbara, USA.**
Status of gravitational self-force calculations (with Eliu Huerta).
- July 2012 **13th Marcel Grossmann Meeting (session AN2)**, Stockholm University, Sweden.
Advances at the interface between the self-force formalism and numerical relativity.
- July 2012 **13th Marcel Grossmann Meeting (session AN1)**, Stockholm University, Sweden.
The first law of binary black hole mechanics in general relativity and post-Newtonian theory.
- June 2012 **15th Capra Meeting on Radiation Reaction**, Univ of Maryland, College Park MD, USA.
Self-force for comparable mass binaries.
- Apr. 2012 **APS April Meeting 2012**, Hyatt Hotel, Atlanta GA, USA.
The overlap of numerical relativity, perturbation theory and post-Newtonian theory in the binary black hole problem.
- Sept. 2011 **JSI Mini-Symposium**, University of Maryland, College Park MD, USA.
Periastron advance in black hole binaries.
- July 2011 **14th Capra Meeting on Radiation Reaction**, University of Southampton, UK.
The gravitational self-force: comparisons with post-Newtonian theory.
- Mar. 2011 **46th Rencontres de Moriond & GPhyS Colloquium**, Planibel Hotel, La Thuile, Italy.
Perturbative, post-Newtonian, and general relativistic dynamics of black hole binaries.
- June 2010 **13th Capra Meeting on Radiation Reaction**, Perimeter Institute, Waterloo, Canada.
The gravitational self-force: comparisons with post-Newtonian theory.

Seminars

- Mar. 2024 **DAp Seminar**, Commissariat à l'énergie atomique, Saclay, France.
Questionner la Modernité à l'heure de l'Anthropocène.
- Dec. 2023 **Autumn Seminar**, Institut für Philosophie, University of Bern, Switzerland.
Questioning Modernity in the Anthropocene.
- Nov. 2023 **Physics Colloquium**, Université Paris Cité, Paris, France.
Un état des lieux biophysique de l'Anthropocène.
- May 2023 **Seminar**, Laboratoire du Changement Social et Politique, Paris, France.
Un état des lieux biophysique de l'Anthropocène.
- Mar. 2023 **Math-Physics Seminar**, Institut de Mathématiques de Bourgogne, Dijon, France.
Aux racines de l'Anthropocène.
- Mar. 2023 **LUTH Seminar**, Observatoire de Meudon, France.
Anthropocène: le constat biophysique.
- Nov. 2022 **GR Seminar**, Institute for Theoretical Physics, University of Leipzig, Germany.
The shape of black hole Love.
- June 2022 **HEP-GR Seminar**, Institute for Theoretical Physics, University of Leipzig, Germany.
First laws of compact binary mechanics.
- Jan. 2022 **IAP Seminar**, Institut d'Astrophysique de Paris, France.
Gravitational waves from binary systems of compact objects.
- Nov. 2021 **Theory Group Seminar**, APC Laboratory, Paris, France.
Spinning black holes fall in Love.
- Mar. 2021 **Gravity Webinar**, Universitat de les Illes Balears, Palma, Spain.
Spinning black holes fall in Love.

- Jan. 2021 **Astrophysical Relativity Webinar**, Albert Einstein Institute, Potsdam, Germany.
Spinning black holes fall in Love.
- Nov. 2020 **IPPC Webinar**, Niels Bohr Institute, University of Copenhagen, Denmark.
Spinning black holes fall in Love.
- Sept. 2020 **Theoretical Physics Webinar**, Carnegie Mellon University, Pittsburgh PA, USA.
Tidal Love numbers of Kerr black holes.
- Aug. 2020 **General Relativity Webinar**, Universidad Nacional de Córdoba, Córdoba, Argentina.
Spinning black holes fall in Love.
- July 2019 **LIneA Webinar**, Observatório Nacional, Rio de Janeiro, Brazil.
Probing the vicinity of the Galactic Center black hole with LISA.
- Nov. 2018 **Theoretical Physics Seminar**, Universidade Federal Fluminense, Niteroi, Brazil.
Celestial mechanics in Kerr spacetime.
- Apr. 2018 **LESIA Seminar**, Observatoire de Meudon, France.
Gravitational waves: from theory to observations.
- May 2017 **LUTH Seminar**, Observatoire de Meudon, France.
General relativistic dynamics of binary black holes.
- Mar. 2017 **PMMH Seminar**, ESPCI Paris, Paris, France.
General relativity and gravitational waves, 100 years after Einstein.
- Nov. 2016 **Math-Physics Seminar**, Institut de Mathématiques de Bourgogne, Dijon, France.
General relativistic dynamics of binary black holes.
- Sept. 2016 **Physics Colloquium**, École Normale Supérieure, Paris, France.
Gravitational waves: theory, sources and detections.
- Mar. 2016 **LPT Seminar**, Université Paul Sabatier, Toulouse, France.
General relativity and gravitational waves, 100 years after Einstein.
- Mar. 2016 **Theoretical Physics Seminar**, Université François Rabelais, Tours, France.
Thermodynamics of a black hole with moon.
- Apr. 2015 **Astrophysical Relativity Seminar**, Albert Einstein Institute, Potsdam, Germany.
GR@100: revisiting the classical tests with compact binaries.
- Oct. 2014 **Gravity Seminar**, Institut des Hautes Études Scientifiques, Bures-sur-Yvette, France.
Thermodynamics of a black hole with moon.
- May 2014 **CGCA Seminar**, University of Wisconsin-Milwaukee, Milwaukee WI, USA.
GR@99: Revisiting the classical tests with compact binaries.
- Oct. 2012 **General Relativity Group Seminar**, University of Southampton, UK.
The first law of binary black hole mechanics.
- Dec. 2011 **Gravity Theory Seminar**, University of Maryland, College Park MD, USA.
The first law of binary black hole mechanics.
- Apr. 2011 **Theoretical Astrophysics Seminar**, University of Florida, Gainesville FL, USA.
Exploring the relativistic dynamics of coalescing black hole binaries.
- Oct. 2009 **General Relativity Group Seminar**, University of Southampton, UK.
Post-Newtonian calculation of the gravitational self-force for black hole binaries.

Summer school lectures

- Oct. 2020 **XLIII Congresso Paulo Leal Ferreira**, UNESP, São Paulo, Brazil.
Gravitational waves: from theory to observations.
- Oct. 2018 **IV José Plínio Baptista School on Cosmology**, Aroso Paço Hotel, Pedra Azul, Brazil.
Topics in post-Newtonian theory.
- Aug. 2017 **École de Physique Distribuée**, Université Paris Diderot, Paris, France.
Relativité restreinte et générale.
- June 2017 **International Pulsar Timing Array 2017**, CIEP, Sèvres, France.
Post-Keplerian effects in binary systems.
- Sept. 2016 **NewCompStar School 2016**, University of Coimbra, Portugal.
Analytical relativity modelling of coalescing compact binaries.

Invited Scientific Visits

Long-term visits

- Aug. 2019 *Centro Brasileiro de Pesquisas Físicas*, Rio de Janeiro, Brazil (11 months).
- Oct. 2018 *Centro Brasileiro de Pesquisas Físicas*, Rio de Janeiro, Brazil (6 months).
- Feb. 2014 *Yukawa Institute for Theoretical Physics*, Kyoto University, Kyoto, Japan (4 weeks).
- Sept. 2012 *Kavli Institute for Theoretical Physics*, Santa Barbara CA, USA (3 weeks).
- Jan. 2009 Department of Physics, Washington University, St. Louis MI, USA (6 weeks).

Short-term visits

- Feb. 2018 School of Mathematics, *University College Dublin*, Dublin, Ireland (1 week).
- June 2015 *Yukawa Institute for Theoretical Physics*, Kyoto University, Kyoto, Japan (10 days).
- May 2015 *Fields Institute*, University of Toronto, Toronto, Canada (10 days).
- May 2015 *Max Planck Institute for Gravitational Physics*, Potsdam, Germany (3 days).
- May 2014 *Parker Center*, University of Wisconsin-Milwaukee, Milwaukee WI, USA (1 week).
- Apr. 2014 School of Mathematics, *University of Southampton*, Southampton, UK (3 days).
- May 2011 *TAPIR Group*, *California Institute of Technology*, Pasadena CA, USA (4 days).
- Apr. 2011 Department of Physics, *University of Florida*, Gainesville FL, USA (4 days).
- Jan. 2010 *Max Planck Institute for Gravitational Physics*, Potsdam, Germany (4 days).
- Oct. 2009 Department of Physics, Washington University, St. Louis MI, USA (4 weeks).
- Sept. 2009 School of Mathematics, *University of Southampton*, Southampton, UK (4 days).

Teaching Experience

- Jan. 2024 **Lecturer**, *École nationale supérieure des techniques avancées*, Palaiseau, France.
Taught a course on a *Systemic Analysis of the Anthropocene* for undergraduate students (16 hours).
- Oct. 2018 **Guest Lecturer**, *Centro Brasileiro de Pesquisas Físicas*, Rio de Janeiro, Brazil.
Taught a course on the *Theory of Gravitational Waves* for graduate students (16 hours).

2014–2018	Lecturer , <i>Observatoire de Paris</i> , Meudon, France. Taught a <i>General Relativity</i> course for graduate students (30 hours).
2008–2010	Graduate Teaching Assistant , <i>Université Pierre et Marie Curie</i> , Paris, France. <ul style="list-style-type: none"> • Taught a section of a <i>Cosmology</i> class for graduate students (12 hours). • Taught a section of an <i>Electromagnetism</i> class for third-year undergraduates (22 hours). • Taught a section of a <i>Mathematics for Physicists</i> class for second-year undergraduates (38 hours). • Taught a section of an <i>Introduction to Physics</i> class for first-year undergraduates (68 hours).
2006–2008	Exam Instructor in Classes Préparatoires , <i>Lycée Lavoisier</i> , Paris, France. Designed, supervised and corrected simulated tests for competitive exams for students attempting to enter French “Grandes Écoles” (60 hours).
2006–2007	Exam Instructor in Classes Préparatoires , <i>Lycée Corot</i> , Savigny-sur-Orge, France. Designed, supervised and corrected simulated tests for competitive exams for students attempting to enter French “Grandes Écoles” (60 hours).
2005–2006	Aggrégation of Physics , <i>École Normale Supérieure de Cachan</i> , Cachan, France. Year-long intensive preparation of the competitive exams to be awarded the highest French national teaching certification.
2004–2005	Teaching Internship , <i>Lycée Marie Curie</i> , Sceaux, France. Weekly preparation and instruction of physics classes to high school students.
2003–2004	Volunteer Tutoring , <i>Social Services of Cachan</i> , Cachan, France. Assisted middle-school students with homework for three hours a week.

Mentoring Experience

Mar. 2024	Mentoring second-year graduate student T. Lui on a research project exploring a <i>First law of compact binary mechanics at quadrupolar order</i> (5 months).
Mar. 2024	Mentoring second-year graduate student P. Piovesan on a research project exploring a <i>Symplectic mechanics of spinning compact binaries</i> (5 months).
2018–2021	Co-mentored with J. Perez Ph.D. student P. Ramond. Thesis title: <i>The first law of mechanics in General Relativity and isochrone orbits in Newtonian gravity</i> (3 years).
Mar. 2018	Mentored second-year graduate student P. Ramond on a research project exploring a <i>First law of binary mechanics for compact objects with internal structure</i> (4 months).
Mar. 2017	Co-mentored with L. Guillemot second-year graduate student F. Cangemi on a research project exploring <i>The relativistic binary pulsar PSR J0751+1807</i> (3 months).
Jan. 2016	Mentored second-year graduate student A. Abbara on a research project exploring a <i>First law of mechanics for precessing compact binaries</i> (2 months).
Jan. 2013	Mentored fourth-year undergraduate students R. Birnbaum and H. Gerling-Dunsmore on a research project exploring <i>Gravitational waves from dipolar dark matter</i> (7 months).
Feb. 2013	Co-mentored with Y. Pan first-year undergraduate students B. Chang and C. Yeager on a research project exploring <i>Black holes, Dyson spheres and the Penrose process</i> (4 months).

Professional Service

Collective responsibilities

2019–2021	Coordinator of the <i>Action fédératrice PhyFOG</i> of the Paris Observatory.
2018–....	Topic leader in the working group <i>Formes d'onde</i> of the <i>GdR Ondes Gravitationnelles</i> .

2017–2021 Topic leader in the working group *Source modelling* of the COST Action GWVerse.

Editorial activity

2016–2018 Co-guest editor with E. Poisson and B. Whiting of the *Class. Quantum Grav.* Focus Issue on *Approaches to the two-body problem*.

Conferences

- Dec. 2022 SOC member for a workshop on *Mathematical Aspects of Black Hole Theory*.
July 2022 Chaired the parallel session B3 during the *23rd International Conference on GRG*.
Dec. 2021 Co-organized the *Journée LISA à l'Observatoire*.
July 2019 SOC member for the *22nd Capra Meeting on Radiation Reaction in General Relativity*.
July 2017 LOC member for the *International Pulsar Timing Array Science Meeting 2017*.
June 2016 Organized the *19th Capra Meeting on Radiation Reaction in General Relativity*.
July 2015 Chaired the parallel session BN6 during the *14th Marcel Grossmann Meeting*.
June 2012 Co-organized the *15th Capra Meeting on Radiation Reaction in General Relativity*.

Thesis committee

- June 2023 Member of the evaluation committee of David Trestini's Ph.D. thesis.
May 2023 Member of the evaluation committee of David Quispe Aruquipa's Ph.D. thesis.
Nov. 2021 Member of the evaluation committee of Andrea Antonelli's Ph.D. thesis.
Oct. 2018 Member of the evaluation committee of Oscar Ramos's Ph.D. thesis.

Scientific expertise

- May 2017 Grant reviewer for the *Programme Emergence* of the Paris City Hall.
Jan. 2017 Grant reviewer for the *Royal Society* University Research Fellowship Program.
Mar. 2013 Grant reviewer for the *Agence Nationale de la Recherche* (French analog to NSF).
2012–.... Referee for *Phys. Rev. Lett.*, *Phys. Rev. D*, *Class. Quantum Grav.* and *Gen. Rel. Grav.*

Professional Societies

- 2015–.... Société Française d'Astronomie et d'Astrophysique
2013–.... International Society on General Relativity and Gravitation
2009–2016 American Physical Society

Public Outreach

Conferences

- Dec. 2023 **ACA Yearly Conferences**, Théâtre Traversière, Paris, France.
Les ondes gravitationnelles.
Aug. 2023 **33rd Fleurance Astronomy Festival**, Halle Eloi Castaing, Fleurance, France.
Physique et géométrie des trous noirs (fil noir).

- Aug. 2023 **33rd Fleurance Astronomy Festival**, Centre culturel, Fleurance, France.
L'âge d'or observationnel des trous noirs.
- June 2023 **150 years of the SF2A**, Institut Henri Poincaré, Paris, France.
Énigmatique trou noir.
- May 2023 **AQUILA Monthly Conferences**, Campus Valrose, Université de Nice, France.
L'âge d'or observationnel des trous noirs.
- Mar. 2022 **SAF Monthly Conferences**, Conservatoire national des arts et métiers, Paris, France.
Astronomie gravitationnelle : dernières nouvelles des vibrations de l'espace-temps.
- Nov. 2021 **Rencontres du Ciel et de l'Espace**, Cité des sciences et de l'industrie, Paris, France.
Astronomie gravitationnelle : dernières nouvelles des vibrations de l'espace-temps.
- Nov. 2021 **Faites de la Science**, Maison dans la vallée, Avon, France.
La découverte des ondes gravitationnelles.
- Mar. 2021 **Astronomy Lectures in Primary School**, École Françoise Dolto, Montreuil, France.
Balade dans le cosmos.
- Nov. 2020 **Monthly Public Conferences**, Institut d'Astrophysique de Paris, France.
Astronomie gravitationnelle : dernières nouvelles des vibrations de l'espace-temps.
- Oct. 2020 **DU Lumières sur l'Univers**, Observatoire de Paris, Meudon, France.
Dernières nouvelles de l'astronomie gravitationnelle.
- May 2019 **Uranoscope de l'Île-de-France**, Gretz-Armainvilliers, France.
L'astronomie gravitationnelle.
- Aug. 2018 **28th Fleurance Astronomy Festival**, Halle Eloi Castaing, Fleurance, France.
Espace, temps et espace-temps (fil rouge).
- Aug. 2018 **28th Fleurance Astronomy Festival**, Centre culturel, Fleurance, France.
L'astronomie gravitationnelle.
- Mar. 2018 **Association Foi et Culture Scientifique**, Gif sur Yvette, France.
La relativité générale et les ondes gravitationnelles.
- Nov. 2017 **Dialogues – Des clés pour comprendre**, Musée des arts et métiers, Paris, France.
Les ondes gravitationnelles.
- Oct. 2017 **Festival des 2 Infinis**, Université Pierre et Marie Curie, Paris, France.
Les ondes gravitationnelles, messagères d'Einstein.
- Oct. 2017 **Fête de la science 2017**, Institut Henri Poincaré, Paris, France.
La dynamique d'un astéroïde.
- Sept. 2017 **Cosmos en scène, télescopes sur Seine**, Hôtel de Ville, Paris, France.
La découverte des ondes gravitationnelles.
- June 2017 **Astronomy Lectures in Primary School**, École Louise Michel, Montreuil, France.
Balade dans le cosmos.
- June 2017 **Astronomy-Physics Club**, Maison des Jeunes et de la Culture, Palaiseau, France.
La relativité générale et les trous noirs.
- May 2017 **Colas Science Meetings**, Campus scientifique Colas, Magny-les-Hameaux, France.
De la théorie de la relativité générale à la géolocalisation.
- May 2017 **Conferences on the Professor Moriarty**, Institut Henri Poincaré, Paris, France.
La dynamique d'un astéroïde.

- May 2017 **Physics Lecture for High School students**, Institut Henri Poincaré, Paris, France.
La relativité générale, les trous noirs et les ondes gravitationnelles.
- Apr. 2017 **Physics Lecture in Classes Préparatoires**, Lycée Charlemagne, Paris, France.
Cosmologie newtonienne et relativiste.
- Apr. 2017 **Stage Association Science Ouverte**, École normale supérieure, Paris, France.
La relativité générale, les trous noirs et les ondes gravitationnelles.
- Jan. 2017 **Astronomy Lectures in Primary School**, École Louise Michel, Montreuil, France.
Balade dans le cosmos.
- Nov. 2016 **Le Forum du CNRS**, Cité des échanges, Marcq-en-Baroeul, France.
La découverte des ondes gravitationnelles.
- Oct. 2016 **5th Ifrane Astronomy Festival**, Université Al Akhawayn, Ifrane, Marocco.
Les ondes gravitationnelles, messagères d'Einstein.
- Oct. 2016 **Reims Planetarium Conferences**, Médiathèque Jean Falala, Reims, France.
Les ondes gravitationnelles, messagères d'Einstein.
- Aug. 2016 **26th Fleurance Astronomy Festival**, Halle Eloi Castaing, Fleurance, France.
Anatomie d'une onde gravitationnelle (fil rouge).
- Aug. 2016 **26th Fleurance Astronomy Festival**, Centre culturel, Fleurance, France.
Les ondes gravitationnelles, messagères d'Einstein.
- June 2016 **MOOC Peser l'Univers**, Observatoire de Paris, Meudon, France.
Qu'est-ce qu'un trou noir ?
- May 2016 **Montpellier Planetarium Conferences**, Planétarium Galilée, Montpellier, France.
La relativité générale et les ondes gravitationnelles.
- Apr. 2016 **Physics Lecture in Classes Préparatoires**, Lycée Charlemagne, Paris, France.
Cosmologie newtonienne et relativiste.
- Mar. 2016 **Physics Lecture in High School**, Lycée Rabelais, Meudon, France.
Les ondes gravitationnelles, messagères d'Einstein.
- Mar. 2015 **Astronomy Lectures in Primary School**, École Jean Jaurès, Montreuil, France.
Balade dans le cosmos.
- Nov. 2014 **Estiennales 2014 Cultural Festival**, École Estienne, Paris, France.
Les trous noirs, murs cosmiques à sens unique.

MOOCs

- Sept. 2017 *Éducation par la recherche: astrophysique à l'École*, Université Sorbonne Paris Cité.
- Apr. 2016 *Peser l'Univers*, Observatoire de Paris.

Interviews

- March 2022 Interviewed by R. Fouchard for the French popular science magazine *Science & Vie*.
- Jan. 2021 Interviewed by F. Nicot for the French popular science magazine *Sciences et Avenir*.
- Oct. 2016 Interviewed by S. Guilbaud for the French popular science magazine *La Recherche*.
- Aug. 2016 Interviewed by S. Iglesis for the French public radio station *France Culture*.
- July 2016 Interviewed by F. Olagnier for the French daily newspaper *La Dépêche du Midi*.
- Oct. 2015 Interviewed by É. Bron for the MOOC *Peser l'Univers* of the Paris Observatory.

Article

- Dec. 2015 *À chaque détecteur, sa source*, by A. Le Tiec,
In *Verra-t-on bouger l'espace-temps ?* by P. Minet, Dossier La Recherche **16**, 82 (2015)

Miscellaneous

- 2019–.... Volunteer for *Les p'tits cueilleurs d'étoiles*, an association that allows hospitalized children to discover the world of astronomy.
- Aug. 2018 Volunteer during the first edition of the *Spacebus France*, an astronomy outreach bus that traveled along the French Riviera.
- Mar. 2017 Contribution to community management during the *Nuit des ondes gravitationnelles*.
- Oct. 2016 Volunteer during the first edition of the *Spacebus Maroc*, an astronomy outreach bus that traveled all across Morocco.
- 2015–2018 Scientific guidance for *Les Saventuriers de l'Univers*, an educational program that promotes learning through active investigation in school.
- 2012–2015 Volunteer for NASA's *Ask an Astrophysicist* outreach program.

Contributed Talks and Seminars

- Dec. 2021 **Journée LISA à l'Observatoire, Institut d'Astrophysique de Paris**, France.
Filling the gap: gravitational waveforms for intermediate mass ratio inspirals.
- June 2021 **24th Capra Meeting on Radiation Reaction, Online**.
Tidal Love numbers of Kerr black holes clarified.
- Mar. 2021 **Meeting of the National Research Group on Gravitational Waves, Online**.
Spinning black holes fall in Love.
- Nov. 2020 **GReCO Seminar, Online**.
Spinning black holes fall in Love.
- Oct. 2020 **Workshop on Solving the Source-Free Einstein Equations, Online**.
Tidal Love numbers of Kerr black holes.
- Sept. 2020 **13th International LISA Symposium, Online**.
Spinning black holes fall in Love.
- June 2020 **23rd Capra Meeting on Radiation Reaction, Online**.
Tidal Love numbers of spinning black holes.
- June 2019 **22nd Capra Meeting on Radiation Reaction, CBPF**, Rio de Janeiro, Brazil.
Probing the vicinity of the galactic center black hole with LISA.
- May 2019 **Journée PhyFOG 2019, Institut d'Astrophysique de Paris**, France.
Mechanics and thermodynamics of a nearly extremal black hole with a moon.
- June 2018 **Journée GPhys 2018, Observatoire de Paris**, France.
Horizon surface gravity in black hole binaries.
- Oct. 2017 **Journées LISA France 2017, Université Paris Diderot**, Paris, France.
Horizon surface gravity in black hole binaries.
- June 2017 **The Era of Gravitational-Wave Astronomy, Institut d'Astrophysique de Paris**, France.
Horizon surface gravity in black hole binaries.

- Mar. 2017 **52nd Rencontres de Moriond & GRAM Colloquium**, Planibel Hotel, La Thuile, Italy.
Horizon surface gravity in black hole binaries.
- Mar. 2017 **52nd Rencontres de Moriond & GRAM Colloquium**, Planibel Hotel, La Thuile, Italy.
Celestial mechanics of eccentric compact binaries.
- Nov. 2016 **GReCO Seminar**, Institut d’Astrophysique de Paris, France.
Celestial mechanics in Kerr spacetime.
- July 2016 **GR21 International Conference**, Columbia Universiy, New York NY, USA.
Orbital dynamics of eccentric compact binaries.
- July 2016 **Journée GPhys 2016**, Université Paris Diderot, Paris, France.
Orbital dynamics of eccentric compact binaries.
- June 2016 **Journées SF2A 2016**, Université Claude Bernard, Lyon, France.
Orbital dynamics of eccentric compact binaries.
- June 2016 **Journées GRAM 2016**, Université Paris Diderot, Paris, France.
Orbital dynamics of eccentric compact binaries.
- June 2015 **Journées SF2A 2015**, Université Paul Sabatier, Toulouse, France.
Gravitational self-force correction to the innermost stable circular orbit of a Kerr black hole.
- May 2014 **Journée GPhys 2014**, Observatoire de Paris, Meudon, France.
Gravitational waves from compact object binaries.
- Feb. 2014 **GReCO Seminar**, Institut d’Astrophysique de Paris, France.
Thermodynamics of a black hole with moon.
- Dec. 2013 **Theory Group Seminar**, APC Laboratory, Paris, France.
Thermodynamics of a black hole with moon.
- Nov. 2013 **LUTH Seminar**, Observatoire de Meudon, France.
Thermodynamics of a black hole with moon.
- July 2013 **GR20/Amaldi10 International Conference**, University of Warsaw, Warsaw, Poland.
The overlap of numerical relativity, perturbation theory and post-Newtonian theory in the binary black hole problem.
- July 2013 **GR20/Amaldi10 International Conference**, University of Warsaw, Warsaw, Poland.
Thermodynamics of a black hole with moon.
- Nov. 2012 **Gravity and Cosmology 2012 Workshop**, YITP, Kyoto University, Kyoto, Japan.
Thermodynamics of a black hole with moon.
- June 2012 **Relativity and Gravitation: 100 years...**, Charles University, Prague, Czech Republic.
The first law of binary black hole mechanics.
- Apr. 2012 **Theory Group Seminar**, APC Laboratory, Paris, France.
The first law of binary black hole mechanics.
- Apr. 2012 **GReCO Seminar**, Institut d’Astrophysique de Paris, France.
The first law of binary black hole mechanics.
- Apr. 2012 **LUTH Seminar**, Observatoire de Meudon, France.
The first law of binary black hole mechanics.
- Nov. 2011 **2011 JSI Workshop**, Loews Annapolis Hotel, Annapolis MD, USA.
Dipolar dark matter as an alternative to cold dark matter.
- Oct. 2011 **GRITTS Seminar**, Massachusetts Institute of Technology, Cambridge MA, USA.
Exploring the relativistic dynamics of coalescing black hole binaries.

- July 2011 **14th Capra Meeting on Radiation Reaction**, University of Southampton, UK.
Periastron advance in black hole binaries.
- May 2011 **TAIR Seminar**, California Institute of Technology, Pasadena CA, USA.
Exploring the relativistic dynamics of coalescing black hole binaries.
- May 2011 **APS April Meeting 2011**, Hyatt Hotel, Garden Grove CA, USA.
Periastron advance in black hole binaries.
- Mar. 2011 **GReCO Seminar**, Institut d’Astrophysique de Paris, France.
Perturbative, post-Newtonian, and general relativistic dynamics of black hole binaries.
- Feb. 2010 **Theory Group Seminar**, APC Laboratory, Paris, France.
Comparing and combining post-Newtonian methods with black hole perturbations.
- Feb. 2010 **LUTH Seminar**, Observatoire de Meudon, France.
Comparing and combining post-Newtonian methods with black hole perturbations.
- Jan. 2010 **Numerical Relativity Group Seminar**, Albert Einstein Institute, Potsdam, Germany.
Comparing and combining post-Newtonian methods with black hole perturbations.
- Dec. 2009 **Elbereth 2009 Conference**, Institut d’Astrophysique de Paris, France.
Gravitational recoil of coalescing binary black holes.
- July 2009 **12th Marcel Grossmann Meeting**, Palais de l’UNESCO, Paris, France.
Post-Newtonian calculation of the gravitational self-force for black hole binaries.
- July 2009 **Invisible Universe International Conference**, Palais de l’UNESCO, Paris, France.
Dipolar dark matter and dark energy.
- June 2009 **12th Capra Meeting on Radiation Reaction**, Indiana Univ, Bloomington IN, USA.
Post-Newtonian calculation of the gravitational self-force for black hole binaries.
- June 2009 **Gravity Theory Seminar**, University of Maryland, College Park MD, USA.
Post-Newtonian calculation of the gravitational self-force for black hole binaries.
- Apr. 2009 **Interactions in the Dark Workshop**, Lorentz Center, Leiden, The Netherlands.
Dipolar dark matter and dark energy.
- Feb. 2009 **LISA France 2009 Meeting**, Institut d’Astrophysique de Paris, France.
Post-Newtonian calculation of the self-force for black hole binaries.
- Dec. 2008 **Elbereth 2008 Conference**, Institut d’Astrophysique de Paris, France.
Comparison of third post-Newtonian and self-force calculations for extreme mass ratio black hole binaries.
- Sept. 2008 **LUTH Seminar**, Observatoire de Meudon, France.
Model of dark matter and dark energy based on gravitational polarization.
- Apr. 2008 **GReCO Seminar**, Institut d’Astrophysique de Paris, France.
Model of dark matter and dark energy based on gravitational polarization.