

# David Trestini

STAG Research Center  
University of Southampton  
[david.trestini@southampton.ac.uk](mailto:david.trestini@southampton.ac.uk)  
Citizenships: France & USA

orcid: 0000-0002-4140-0591  
inspire HEP: 2018015  
Google Scholar: [mkvjTKcAAAAJ](https://scholar.google.com/citations?user=mkvjTKcAAAAJ)  
LinkedIn: [david-trestini](https://www.linkedin.com/in/david-trestini/)  
GitHub: [github.com/davidtrestini](https://github.com/davidtrestini)

## ACADEMIC POSITIONS

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### University of Southampton

Postdoctoral researcher at the School of Mathematical Sciences and STAG Research Centre

Southampton, UK  
10/2024 – 09/2027

### Institute of Physics of the Czech Academy of Sciences

Postdoctoral researcher at CEICO

Prague, Czechia  
10/2023 – 09/2024

## EDUCATION

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### Sorbonne Université (IAP and LUTH)

Ph.D. in Physics (supervised by Luc Blanchet and Laura Bernard)

Paris, France  
09/2020 – 08/2023

### University of Cambridge

MASt in Applied Mathematics (a.k.a. Part III)

Cambridge, UK  
10/2019 – 07/2020

### École polytechnique

Diplôme d'ingénieur

Palaiseau, France  
09/2016 – 07/2019

### Lycée Louis-le-Grand

Classes préparatoires MPSI-MP\*

Paris, France  
09/2014 – 07/2016

### Lycée international des Pontonniers

Baccalauréat scientifique (British international option)

Strasbourg, France  
09/2011 – 07/2014

## TEACHING EXPERIENCE

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- **Teaching Assistant** at Sorbonne Université  
*Mathématiques approfondies (LU1MA003)* 01/2022 – 05/2022  
(40 hours)
- **Teaching Assistant** at Sorbonne Université  
*Mathématiques pour les études scientifiques II (LU1MA002)* 01/2022 – 05/2022  
(38 hours)
- **Teaching Assistant** at Sorbonne Université  
*Mécanique-Physique 1 - projets numériques (LU1MEPY3)* 09/2021 – 12/2021  
(52 hours)

## PHD STUDENT SUPERVISION

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Informal co-supervision of:

- Davide Usseglio (officially supervised by Salvatore Capozziello at Università di Napoli, now a postdoc at IHÉS)
- Herry Lalus (officially supervised by Thomas Sotiriou at the University of Nottingham)

## RESPONSIBILITIES IN LARGE COLLABORATIONS

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### LISA Consortium

- core member
- coordinator of the “Verified datasets” project in the Waveform Working Group (subproject: “PNpedia”)
- member of “Waveform Coordination Unit” (CU-WAV) in the the Distributed Data Processing Center (DDPC)
  - review of the code associated to Morrás, Pratten and Schmidt, Phys. Rev. D 111 (2025) 8, 084052

### Einstein Telescope

- member

## ORGANIZATION OF SCIENTIFIC MEETINGS

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Member of the Local Organization Committee of:

- 28th Capra Meeting on Radiation Reaction in General Relativity — Southampton (UK) July 2025

## PEER-REVIEW ACTIVITY

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• Physical Review Letters	2 papers
• Physical Review D	7 papers
• Journal of Cosmology and Astroparticle Physics	1 paper
• Journal of High Energy Astrophysics	1 paper

## OUTREACH ACTIVITIES

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- FZU Science Fair 1 June 2024  
*At the Institute of Physics of the Czech Academy of Sciences, I participated in a yearly science fair where children and parents came to discover our research topics around pedagogical games and posters.*
- Outreach concert “Astrosymphony” Spring 2026  
*With my orchestra l’Échappée belle (in which I play the violin), we are preparing a outreach concert with astrophysical themes. The scores were written for “big band” by Pierre Baldy-Moulinier, and we are collaborating with the composer to adapt it to a symphonic orchestra. Each movement is themed (e.g. “gravitational waves”), and accompanied by a outreach mini-conference, to which I will participate as well.*

## PUBLIC REPOSITORIES

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### PNpedia

All machine-readable post-Newtonian results in one place

<https://github.com/davidtrestini/PNpedia>

Since 2024

## FUNDING

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- AMX doctoral scholarship 09/2020 – 10/2023
- *Shortlisted and interviewed for the EPSRC “Stephen Hawking” postdoctoral fellowship* 09/2024

## LANGUAGES

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- **English:** native
- **French:** native
- **German:** proficient (C1)
- **Spanish:** conversational (B2)
- **Chinese:** foundational (B1/YCT4)

## PUBLICATIONS

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*Note: In my research community, authors are ordered by alphabetical order by default. Non-alphabetical ordering indicates that the authors have contributed unequally.*

### Preprints to appear soon

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- [1] **D. Trestini**, Z. Nasipak and A. Pound, “Constants of motion in gravitational self-force theory”, *to appear in January 2026*
- [2] L. Blanchet, G. Faye, E. Seraille and **D. Trestini**, “Gravitational radiation reaction for compact binary systems at the fourth-and-a-half post-Newtonian order in harmonic coordinates”, *to appear in January 2026*

### Preprints currently under peer-review

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- [3] **D. Trestini**, “Constants of motion and fundamental frequencies for elliptic orbits at fourth post-Newtonian order”, *submitted to Class. Quant. Grav.*, arXiv:2511.10735
- [4] N. Warburton, B. Wardell, **D. Trestini**, Q. Henry, A. Pound, L. Blanchet, L. Durkan, G. Faye and J. Miller, “Comparison of 4.5PN and 2SF gravitational energy fluxes from quasicircular compact binaries,” *submitted to Phys. Rev. D*, arXiv:2407.00366

### Publications in peer-reviewed journals

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- [5] D. Usseglio, **D. Trestini** and A. Chowdhuri, “Quasi-Keplerian parametrization for compact binaries on hyperbolic orbits in scalar-tensor theories at second post-Newtonian order,” *Phys. Rev. D* **112**, 044048 (2025), arXiv:2504.13829
- [6] **D. Trestini**, “Schott term in the binding energy for compact binaries on circular orbits at fourth post-Newtonian order,” *Phys. Rev. D* **112**, 024076 (2025), arXiv:2504.13245
- [7] K. Cunningham, C. Kavanagh, A. Pound, **D. Trestini**, N. Warburton, J. Neef, “Gravitational memory: new results from post-Newtonian and self-force theory,” *Class. Quant. Grav.* **42**, 135009 (2025) [Addendum: *Class. Quant. Grav.* **42**, 199401 (2025)] in *Focus on Gravitational-Wave Memory Effects: From Theory to Observation*, arXiv:2410.23950
- [8] **D. Trestini**, “Gravitational waves from quasielliptic compact binaries in scalar-tensor theory to one-and-a-half post-Newtonian order,” *Class. Quant. Grav.* **42**, 155016 (2025) in *Focus on Gravitational-Wave Memory Effects: From Theory to Observation*, arXiv:2410.12898
- [9] L. Blanchet, G. Faye and **D. Trestini**, “Gravitational radiation reaction for compact binary systems at the fourth-and-a-half post-Newtonian order,” *Class. Quant. Grav.* **42**, 065015 (2025) in *Focus on the LISA Mission at the Time of Adoption*, arXiv:2407.18295

- [10] **D. Trestini**, “Quasi-Keplerian parametrization for eccentric compact binaries in scalar-tensor theories at second post-Newtonian order and applications,” Phys. Rev. D **109**, 104003 (2024), arXiv:2401.06844
- [11] L. Blanchet, G. Faye, Q. Henry, F. Larrouturou and **D. Trestini**, “Gravitational-Wave Phasing of Quasicircular Compact Binary Systems to the Fourth-and-a-Half Post-Newtonian Order,” Phys. Rev. Lett. **131**, 121402 (2023) in *Editors’ Suggestion*, arXiv:2304.11185.
- [12] L. Blanchet, G. Faye, Q. Henry, F. Larrouturou and **D. Trestini**, “Gravitational-Wave Phasing of Quasicircular Compact Binary Systems to the Fourth-and-a-Half Post-Newtonian Order,” Phys. Rev. D **108**, 064041 (2023), in *Editors’ Suggestion*, arXiv:2304.11186.
- [13] **D. Trestini** and L. Blanchet, “Gravitational-wave tails of memory”, Phys. Rev. D **107**, 104048 (2023), arXiv:2301.09395
- [14] **D. Trestini**, F. Larrouturou and L. Blanchet, “The quadrupole moment of compact binaries to the fourth post-Newtonian order: relating the harmonic and radiative metrics”, Class. Quant. Grav. **40**, 055006 (2023), arXiv:2209.02719
- [15] L. Bernard, L. Blanchet and **D. Trestini**, “Gravitational waves in scalar-tensor theory to one-and-a-half post-Newtonian order”, JCAP **08** (2022) 008, arXiv:2201.10924

## Conference proceedings

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- [16] **D. Trestini** and L. Blanchet, “ Gravitational-wave tails of memory at 4PN order,” in *Proceedings of the 57th Rencontres de Moriond on Gravitation, La Thuile, Italy, 18-25 March 2023*, edited by E. Augé, J. Dumarchez and J. Trần Thành Vân, pp. 235-239, arXiv:2306.00546
- [17] L. Blanchet, G. Faye, Q. Henry, F. Larrouturou and **D. Trestini**, “Gravitational waves from compact binaries to the fourth post-Newtonian order,” in *Proceedings of the 57th Rencontres de Moriond on Gravitation, La Thuile, Italy, 18-25 March 2023*, edited by E. Augé, J. Dumarchez and J. Trần Thành Vân, pp. 231-234, arXiv:2304.13647
- [18] **D. Trestini**, “Gravitational waves in scalar-tensor theory to one-and-a-half post-Newtonian order,” in *Proceedings of the 56th Rencontres de Moriond on Gravitation, La Thuile, Italy, 30 January - 6 February 2022*, edited by E. Augé, J. Dumarchez and J. Trần Thành Vân, pp. 269-272, arXiv:2306.00540

## Theses

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- [19] **D. Trestini**, “Gravitational radiation of compact binary systems in general relativity and in scalar-tensor theories,” Ph.D. thesis (Sorbonne Université, Paris, 2023), hal:tel-04224762

## Publications with large collaborations

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- [20] N. Afshordi *et al.* [LISA Consortium Waveform Working Group], “Waveform Modelling for the Laser Interferometer Space Antenna,” arXiv:2311.01300.

## TALKS

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### Invited talks at international conferences and workshops

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- Meeting of the LISA Consortium Fundamental Physics & Waveform Working Groups (Trieste, IT) 02-04/02/2026
- “Loop-the-loop” workshop, second edition (online) 11/11/2025
- The Future of Gravitational-Wave Astronomy (Bangalore, IN) 28/10/2025

- Fundamental Physics Meets Waveforms With LISA (Potsdam, DE) 05/09/2024
- New Frontiers in Strong Gravity III (Banasque, ES) 12/07/2024

### Invited talks at French national conferences and workshops

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- Atelier API “Ondes gravitationnelles et objets compacts” de l’Observatoire de Paris (Meudon, FR) 11/12/2024
- Atelier Théorie, Univers et Gravitation (Annecy, FR) 07/11/2024
- Journée des groupes de travail “Cosmologie” et “Tests de la relativité générale et théories alternatives” du GdR Ondes Gravitationnelles (Paris, FR) 13/10/2023

### Contributed talks at international conferences and workshops

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- 28<sup>th</sup> Capra Meeting on Radiation Reaction in General Relativity (Southampton, UK) 25/07/2025
- 24<sup>th</sup> International Conference on General Relativity and Gravitation & 16<sup>th</sup> Edoardo Amaldi Conference on Gravitational Waves (Glasgow, UK) 17/07/2025
- GEMMA2 workshop (Rome, IT) 19/09/2024
- 1st TEONGRAV international workshop on theory of gravitational waves (Rome, IT) 16/09/2024
- 27<sup>th</sup> Capra Meeting on Radiation Reaction in General Relativity (Singapore, SG) 17/06/2024
- 57<sup>th</sup> Rencontres de Moriond – Gravitation (La Thuile, IT) 24/03/2023
- 31<sup>st</sup> Texas Symposium on Relativistic Astrophysics (Prague, CZ) 14/09/2022
- 23<sup>rd</sup> International Conference on General Relativity and Gravitation (Beijing, CN) [remote] 05/07/2022
- 56<sup>th</sup> Rencontres de Moriond – Gravitation (La Thuile, IT) 05/02/2022
- AstroParticle Symposium 2023 (Orsay, FR) 23/11/2021
- XIV Black Holes Workshop (Aveiro, PT) 21/12/2021

### Contributed talks at French national conferences and workshops

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- 9<sup>ème</sup> assemblée générale du GdR “Ondes gravitationnelles” (Paris, FR) 13/10/2025
- 8<sup>ème</sup> assemblée générale du GdR “Ondes gravitationnelles” (Marseille, FR) 14/10/2024
- Atelier API “Ondes gravitationnelles et objets compacts” de l’Observatoire de Paris (Meudon, FR) 17/11/2023
- 5<sup>ème</sup> assemblée générale du GdR “Ondes gravitationnelles” (Annecy, FR) 11/10/2021

### Talks at seminars

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- Seminar of the Department of Physics — National University of Singapore (SG) 05/11/2025
- Seminar of the Department of Physics — Indian Institute Of Technology Madras (Chennai, IN) 23/10/2025
- Gravity and astrophysics seminar — University of Mississippi (Oxford, MS, USA) [remote] 11/06/2025
- Particle Cosmology and Gravity Seminar — University of Nottingham (UK) 13/05/2025
- Theory group seminar — AstroParticules et Cosmologie (FR) 28/01/2025
- Gr@v seminar — Universidade de Aveiro (PT) [remote] 12/11/2024
- CENTRA seminar — Instituto Superior Técnico (Lisbon, PT) 31/10/2024
- Theoretical physics seminar — IJCLab (Orsay, FR) 22/05/2024
- Gravity seminar — University of Southampton (GB) 15/02/2024
- Gravitational self-force seminar — University of Southampton (GB) 14/02/2024
- ICAP seminar — Institut d’Astrophysique de Paris (FR) 07/12/2023

- Relativity Seminar — Univerzita Karlova (Prague, CZ) 10/10/2023
- GReCO seminar — Institut d’Astrophysique de Paris (FR) 30/05/2023
- Cosmology and Astroparticle Physics seminar — Université de Genève (CH) 17/03/2023
- General Relativity Friday Seminar — DAMTP, University of Cambridge (GB) 17/02/2023
- Group meeting of the Theoretical Astrophysics group — Universität Tübingen (DE) [remote] 24/03/2022