Lorenzo Speri | Publication list

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Publications:

35 short-author papers published in major peer-reviewed journals
(out of which **8** first-authored papers).
9 papers in submission stage,

Total number of citations: >5900. **h-index**: 27 (using ADS and iNSPIRE).
Web links to list services: ADS; iNSPIRE; arXiv; ORCID.

Papers in major peer-reviewed journals:

35. *Ab uno disce omnes: Single-harmonic search for extreme mass-ratio inspirals.*
Speri, Lorenzo; Tenorio, Rodrigo; Chapman-Bird, Christian; Gerosa, Davide.
10.1103/dh3j-ksfl. Published in Physical Review D.

34. *Probing fundamental physics with Extreme Mass Ratio Inspirals: a full Bayesian inference for scalar charge.*
Speri, Lorenzo; Barsanti, Susanna; Maselli, Andrea; Sotiriou, Thomas P.; Warburton, Niels; van de Meent, Maarten; Chua, Alvin J. K.; Burke, Ollie; Gair, Jonathan.
10.1103/cnhz-6zlk. Published in Physical Review D.

33. *Efficient waveforms for asymmetric-mass eccentric equatorial inspirals into rapidly spinning black holes.*
Chapman-Bird, Christian E. A., **Speri, L.**, et al.
10.1103/scbp-75pf. Published in Physical Review D.

32. *Implications of stochastic gas torques for asymmetric binaries in the LISA band.*
Copparoni, Lorenzo; Barausse, Enrico; **Speri, Lorenzo**; Sberna, Laura; Derdzinski, Andrea.
10.1103/PhysRevD.111.104079. Published in Physical Review D.
• Lead by student I co-supervised.

31. *Is the stochastic signal really detectable?.*
Pozzoli, Federico; Gair, Jonathan; Buscicchio, Riccardo; **Speri, Lorenzo**.
10.1103/22h4-tqh9. Published in Physical Review D.

30. *Massive black hole binaries in LISA: Constraining cosmological parameters at high redshifts.*
Mangiagli, Alberto; Caprini, Chiara; Marsat, Sylvain; **Speri, Lorenzo**; Caldwell, Robert R.; Tamanini, Nicola.
10.1103/PhysRevD.111.083043. Published in Physical Review D.

29. *Impact of relativistic waveforms in LISA's science objectives with extreme-mass-ratio inspirals.*
Khalvati, Hassan; Santini, Alessandro; Duque, Francisco; **Speri, Lorenzo**; Gair, Jonathan; Yang, Huan; Brito, Richard.
10.1103/PhysRevD.111.082010. Published in Physical Review D.
• Lead by student I co-supervised.

28. *Constraining accretion physics with gravitational waves from eccentric extreme-mass-ratio inspirals.*
Duque, Francisco; Kejriwal, Shubham; Sberna, Laura; **Speri, Lorenzo**; Gair, Jonathan.
10.1103/PhysRevD.111.084006. Published in Physical Review D.

27. *Assessing the impact of transient orbital resonances.*
Speri, Lorenzo; Gair, Jonathan R.
10.1103/PhysRevD.103.124032. Published in Physical Review D.

26. *Testing the quasar Hubble diagram with LISA standard sirens.*
Speri, Lorenzo; Tamanini, Nicola; Caldwell, Robert R.; Gair, Jonathan R.; Wang, Benjamin.
10.1103/PhysRevD.103.083526. Published in Physical Review D.

25. *Fast and Fourier: Extreme Mass Ratio Inspiral Waveforms in the Frequency Domain.*
Speri, Lorenzo; Katz, Michael L.; Chua, Alvin J. K.; Hughes, Scott A.; Warburton, Niels; Thompson, Jonathan E.; Chapman-Bird, Christian E. A.; Gair, Jonathan R.
doi.org/10.3389/fams.2023.1266739. Published in Frontiers in Applied Mathematics and Statistics.

24. *Probing Accretion Physics with Gravitational Waves.*
Speri, Lorenzo; Antonelli, Andrea; Sberna, Laura; Babak, Stanislav; Barausse, Enrico; Gair, Jonathan R.; Katz, Michael L.
10.1103/PhysRevX.13.021035. Published in Physical Review X.

23. *Quality over quantity: Optimizing pulsar timing array analysis for stochastic and continuous gravitational wave signals.*
Speri, Lorenzo; Porayko, Nataliya K.; Falxa, Mikel; Chen, Siyuan; Gair, Jonathan R.; Sesana, Alberto; Taylor, Stephen R.
10.1093/mnras/stac3237. Published in Monthly Notices of the Royal Astronomical Society.

22. *A roadmap of gravitational wave data analysis.*
Speri, Lorenzo; Karnesis, Nikolaos; Renzini, Arianna I.; Gair, Jonathan R.
10.1038/s41550-022-01849-y. Published in Nature Astronomy.

21. *Assessing the impact of instrumental calibration uncertainty on LISA science.*
Savalle, Etienne; Gair, Jonathan; **Speri, Lorenzo**; Babak, Stanislav.
10.1103/PhysRevD.106.022003. Published in Physical Review D.

20. *Systematics in tests of general relativity using LISA massive black hole binaries.*
Garg, Mudit; Sberna, Laura; **Speri, Lorenzo**; Duque, Francisco; Gair, Jonathan.
10.1093/mnras/stae2605. Published in Monthly Notices of the Royal Astronomical Society.
• Lead by student I co-supervised.

19. *Impact of correlations on the modeling and inference of beyond vacuum–general relativistic effects in extreme-mass-ratio inspirals.*
Kejriwal, Shubham; **Speri, Lorenzo**; Chua, Alvin J. K.
10.1103/PhysRevD.110.084060. Published in Physical Review D.
• Lead by student I co-supervised.

18. *The second data release from the European Pulsar Timing Array. V. Search for continuous gravitational wave signals.*
EPTA Collaboration et al. (include **Speri, L.**).
10.1051/0004-6361/202348568. Published in Astronomy and Astrophysics.
• Co-led the study, including analysis, interpretation, and manuscript drafting.

17. *Assessing the importance of first postadiabatic terms for small-mass-ratio binaries.*
Burke, Ollie; Piovano, Gabriel Andres; Warburton, Niels; Lynch, Philip; **Speri, Lorenzo**; Kavanagh, Chris; Wardell, Barry; Pound, Adam; Durkan, Leanne; Miller, Jeremy.
10.1103/PhysRevD.109.124048. Published in Physical Review D.

16. *Comparing Recent Pulsar Timing Array Results on the Nanohertz Stochastic Gravitational-wave Background.*
Agazie, G. et al. (include **Speri, L.**).
10.3847/1538-4357/ad36be. Published in The Astrophysical Journal.

15. *The second data release from the European Pulsar Timing Array. IV. Implications for massive black holes, dark matter, and the early Universe.*
EPTA Collaboration et al. (include **Speri, L.**).
10.1051/0004-6361/202347433. Published in Astronomy and Astrophysics.

14. *Impact of the noise knowledge uncertainty for the science exploitation of cosmological and astrophysical stochastic gravitational wave background with LISA.*
Muratore, Martina; Gair, Jonathan; **Speri, Lorenzo**.
10.1103/PhysRevD.109.042001. Published in Physical Review D.

13. *Cosmology with the Laser Interferometer Space Antenna.*
Auclair, Pierre et al. (include **Speri, L.**).
10.1007/s41114-023-00045-2. Published in Living Reviews in Relativity.

12. *The second data release from the European Pulsar Timing Array. I. The dataset and timing analysis.*
EPTA Collaboration et al. (include **Speri, L.**).
10.1051/0004-6361/202346841. Published in Astronomy and Astrophysics.

11. *The second data release from the European Pulsar Timing Array. II. Customised pulsar noise models for spatially correlated gravitational waves.*
EPTA Collaboration et al. (include **Speri, L.**).
10.1051/0004-6361/202346842. Published in Astronomy and Astrophysics.

10. *The second data release from the European Pulsar Timing Array. III. Search for gravitational wave signals.*
EPTA Collaboration et al. (include **Speri, L.**).
10.1051/0004-6361/202346844. Published in Astronomy and Astrophysics.

9. *Second Data Release from the European Pulsar Timing Array: Challenging the Ultralight Dark Matter Paradigm.*
Smarra, Clemente et al. (include **Speri, L.**).
10.1103/PhysRevLett.131.171001. Published in Physical Review Letters.

8. *Searching for continuous Gravitational Waves in the second data release of the International Pulsar Timing Array.*
Falxa, M. et al. (include **Speri, L.**).
10.1093/mnras/stad812. Published in Monthly Notices of the Royal Astronomical Society.

7. *Constraining the evolution of Newton's constant with slow inspirals observed from spaceborne gravitational-wave detectors.*
Barbieri, Riccardo; Savastano, Stefano; **Speri, Lorenzo**; Antonelli, Andrea; Sberna, Laura; Burke, Ollie; Gair, Jonathan; Tamanini, Nicola.
10.1103/PhysRevD.107.064073. Published in Physical Review D.

6. *Modeling transient resonances in extreme-mass-ratio inspirals.*
Gupta, Priti; **Speri, Lorenzo**; Bonga, Beátrice; Chua, Alvin J. K.; Tanaka, Takahiro.
10.1103/PhysRevD.106.104001. Published in Physical Review D.
• Lead by student I co-supervised.

5. *Workshop on Gravitational-Wave Astrophysics for Early Career Scientists.*
Bayle, Jean-Baptiste et al. (include **Speri, L.**).
10.1038/s41550-022-01629-8. Published in Nature Astronomy.

4. *The International Pulsar Timing Array second data release: Search for an isotropic gravitational wave background.*
Antoniadis, J. et al. (include **Speri, L.**).
10.1093/mnras/stab3418. Published in Monthly Notices of the Royal Astronomical Society.

3. *Noise analysis in the European Pulsar Timing Array data release 2 and its implications on the gravitational-wave background search.*
Chalumeau, A. et al. (include **Speri, L.**).
10.1093/mnras/stab3283. Published in Monthly Notices of the Royal Astronomical Society.

2. *Common-red-signal analysis with 24-yr high-precision timing of the European Pulsar Timing Array: inferences in the stochastic gravitational-wave background search.*
Chen, S. et al. (include **Speri, L.**).
10.1093/mnras/stab2833. Published in Monthly Notices of the Royal Astronomical Society.

1. *Fast extreme-mass-ratio-inspiral waveforms: New tools for millihertz gravitational-wave data analysis.*
Katz, Michael L.; Chua, Alvin J. K.; **Speri, Lorenzo**; Warburton, Niels; Hughes, Scott A.
10.1103/PhysRevD.104.064047. Published in Physical Review D.

Submitted papers.:

9. *SlotFlow: Amortized Trans-Dimensional Inference with Slot-Based Normalizing Flows.*
Houba, Niklas; Giarda, Giovanni; **Speri, Lorenzo**.
10.48550/arXiv.2511.23228.

8. *Systematic errors in fast relativistic waveforms for Extreme Mass Ratio Inspirals.*
Khalvati, Hassan; Lynch, Philip; Burke, Ollie; **Speri, Lorenzo**; van de Meent, Maarten; Nasipak, Zachary.
10.48550/arXiv.2509.08875.
• Lead by student I co-supervised.

7. *Dissecting the nanoHz gravitational wave sky: frequency-correlated anisotropy induced by eccentric supermassive black hole binaries.*
Eleonora Moreschi, Beatrice; Valtolina, Serena; Sesana, Alberto; Shaifullah, Golam; Falxa, Mikel; **Speri, Lorenzo**; Izquierdo-Villalba, David; Chalumeau, Aurelien.
10.48550/arXiv.2506.14882.
• Lead by student I co-supervised.

6. *Searching for extreme mass ratio inspirals in LISA: from identification to parameter estimation.*
Strub, Stefan H.; **Speri, Lorenzo**; Giardini, Domenico.
10.48550/arXiv.2505.17814.

5. *Sequential simulation-based inference for extreme mass ratio inspirals.*
Cole, Philippa S.; Alvey, James; **Speri, Lorenzo**; Weniger, Christoph; Bhardwaj, Uddipta; Gerosa, Davide; Bertone, Gianfranco.
10.48550/arXiv.2505.16795.

4. *Rapid Construction of Joint Pulsar Timing Array Datasets: The Lite Method.*
Larsen, Bjorn et al. (include **Speri, L.**).
10.48550/arXiv.2503.20949.

3. *Fewer supermassive binary black holes in pulsar timing array observations.*
Goncharov, Boris et al. (include **Speri, L.**).
10.48550/arXiv.2409.03627.

2. *GWnext 2024: Meeting Summary.*
Torres-Orjuela, Alejandro et al. (include **Speri, L.**).
10.48550/arXiv.2406.03498.

1. *LISA Definition Study Report.*
Colpi, Monica et al. (include **Speri, L.**).
10.48550/arXiv.2402.07571.
- Contribution to the LISA science case of EMRIs/IMRIs.