Lorenzo Speri | Curriculum Vitæ

lorenzo.speri@esa.int • https://lorenzsp.github.io/

Academic positions

Postdoctoral Research Fellow — **Noordwijk, The Netherlands**
European Space Agency, European Space Technology Centre — *Oct. 2024 - current*

- *Main activity*: Enabling maximum science return from gravitational-wave data across the full spectrum.
  Data analysis for LISA, Pulsar Timing Arrays (PTA), and ground-based detectors.
  Cross-mission application of data analysis to diverse science goals.
  Science requirements formulation, communication with industry partners.
- *ESA training*: Mission lifecycle (From Proposal to Discovery Mission), Risk Management on Space Missions, ESA Science Programme, Turning ideas into mission proposals.

Education

Ph.D. — **Potsdam, Germany**
Max Planck Institute for Gravitational Physics (Albert Einstein Institute Potsdam) — *Sept. 2020 - Oct. 2024*

- *Supervisor*: J. Gair.
- *Thesis Title*: Advancing Gravitational Wave Astronomy: Novel Methodologies for Data Analysis and Waveform Modelling of Nanohertz and Millihertz Signals
- *Final Grade*: Summa cum laude

Master's degree in Theoretical Physics — **Heidelberg, Germany**
University of Heidelberg — *Sept. 2018 - July 2020*

- *Supervisor*: J. Gair and M. Bartelmann.
- *Thesis title*: Effective Resonance Model: a small step for the constants of motion, a giant leap for biases in EMRI parameter estimation.
- *Final grade*: 1.0 (highest grade)

Bachelor's degree in Physics — **Trento, Italy**
Università degli Studi di Trento — *Sept. 2015 - July 2018*

- *Supervisor*: B. Giacomazzo.
- *Thesis title*: Analyzing Gravitational Waves through Numerical Simulations of Compact Binaries.
- *Final degree grade*: 110/110.

Metrics

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: >5800. **h-index**: 26 (using ADS and iNSPIRE).
Web links to list services: ADS; iNSPIRE; arXiv; ORCID.
Full list of publications available below and at `lorenzsp.github.io/publist.pdf`.
Presentations: **19** talks at conferences (invited **9**), **11** talks at department seminars (invited **11**).
Full list of presentations available below and at `lorenzsp.github.io/talklist.pdf`.

Fellowships, Awards & Grants

- Space Faculty Grant 25k. Modernizing LISA Data Analysis: Machine Learning meets Bayesian Statistics. *2025*
- Stefano Braccini PhD Thesis Prize, Gravitational Wave International Committee (GWIC). *2025*
- European Space Agency Postdoctoral Fellowship. *2024*
- Burke Institute Prize Fellowship, Caltech (declined). *2024*

- NASA Postdoctoral Program (declined). *2024*
- Merit Award, University of Trento. *2019*
- Erasmus+ Programme Scholarship, University of Oslo. *2023*

Student Co-Supervision

As a research fellow, I cannot be officially appointed as a supervisor of students at any level. However, with the agreement of the relevant permanent staff, I have supervised students on several projects.
Ph.D. students: Lucas Pouw at Leiden University, Federico Fantoccoli at AEI Potsdam, Shubham Kejriwal at National University of Singapore (1 paper), Beatrice Elena Moreschi at University of Milano-Bicocca (1 paper), Hassan Khalvati at Perimeter Institute (2 papers), Lorenzo Copparoni at SISSA (1 paper), Gupta Priti at Kyoto University (1 paper), Mudit Garg at University of Zürich (1 paper).
MSc students: Maria Salgado at Leiden University.

Teaching

- Teaching assistant to Prof. Dr. Alessandra Buonanno for the course of Gravitational Waves *2021*
- GPU Techniques to Accelerate GW Waveforms and Data Analysis Computations, Toulouse *2022*
- Beyond vacuum Extreme Mass Ratio Inspirals, SISSA, Trieste *2023*
- Extreme Mass Ratio Inspiral Waveforms in a nutshell, GRAPPA, Amsterdam *2023*

Public Outreach

- European Space Agency Open Days. *2025*
- Art & Astronomy Talk at TORCH Gallery Amsterdam. *2025*
- Space Citizen Forum Junior Edition, European Space Technology Centre, Noordwijk. *2025*
- Potsdamer Tag der Wissenschaften, Potsdam University. Public outreach in German. *2021*

Leadership Roles

- Lead developer of the LISA Extreme Mass Ratio Inspiral (EMRI) search pipeline.
- Lead for defining Figures of Merit to assess science performance for EMRI/IMRI in LISA.
- Co-lead of the search for continuous gravitational waves in the EPTA Data Release 2.

Academic Service

Conference organizer (or committee member)

- *1st Trieste meeting on the physics of gravitational waves*, Trieste, Italy *2023*
- *Fast EMRI Waveforms Hackathon*, Southampton, UK *2025*
- *LISA-AI Hackathon*, Noordwijk, The Netherlands *2026*

Memberships

- LISA Consortium. *since 2020*
- Distributed Data Processing Center. *since 2024*
- LISA Performance & Operation. *since 2024*
- LISA Netherlands member. *since 2024*
- European Pulsar Timing Array collaboration. *since 2020*
- International Pulsar Timing Array collaboration. *since 2020*

Open Source Software Contributions

I develop open-source scientific software with emphasis on scalable statistical inference, signal modeling, Central and Graphic Processing Unit (CPU, GPU) acceleration, high performance computing (HPC), and reproducible data-analysis pipelines. HPC experience with major supercomputing facilities in the Netherlands SPIDER (GPUs and CPUs), in Germany Hypatia (CPU), Saraswati & Lakshmi (GPU) and at Max Planck Computing and Data

Facility ((CPU & GPU)). You can see my contributions at `https://github.com/lorenzsp` and below.

FastEMRIWaveforms
Core developer and maintainer: architected and implemented EMRI waveform generation modules within a community-standard open-source framework. Developed **GPU-accelerated** and **vectorized** implementations enabling large-scale parameter studies and rapid likelihood evaluations. Led documentation and tutorial development to lower entry barriers and support long-term community adoption.

EMRI-Search
Lead developer: designed an end-to-end **scalable data-analysis pipeline** for EMRI detection in LISA simulated data. Integrated **HPC**, **GPU acceleration**, **JAX-based differentiable programming**, and **machine learning** to enable gravitational wave searches at scale.

EMRI-FOM
Lead developer: designed quantitative **Figures of Merit** linking mission design choices to EMRI/IMRI science performance for LISA. Built interactive, reproducible analysis notebooks (Binder-enabled) to support exploratory science and mission trade studies. Enabled large-scale Monte Carlo studies via **HPC deployment**.

DirtyEMRI
Lead developer: developed a modular framework to incorporate **environmental and beyond-vacuum corrections** into EMRI waveform modeling. Enabled systematic studies of detectability and parameter bias induced by astrophysical environments, one of the key science objectives for LISA.

testGRwEMRIs
Lead developer: implemented a **full Bayesian inference pipeline** for tests of fundamental physics with EMRIs. Focus on Markov Chain Monte Carlo sampling of high-dimensional parameter space.

EMRI Animation & Sonification
Lead developer: created visualization and **sonification tools** for EMRI/IMRI orbits and waveforms to support scientific communication and outreach. Selected for the European Space Agency LISA mission website for public-facing dissemination.

GRAPPA EMRI tutorial
Lead developer and instructor: created a hands-on tutorial on EMRI waveform modeling and data analysis. Developed **educational material** emphasizing understanding EMRI waveforms and data analysis.

StandardSirensVSQuasars
Lead developer: built a reproducible Python framework for cosmological model comparison using LISA standard sirens and quasar distance indicators. Simulated LISA observations to assess how gravitational-wave standard sirens can test and differentiate between ΛCDM and alternative cosmological models suggested by quasar data.

slotflow-inference
Contributing developer: contributed to an **amortized Bayesian inference** framework for source separation with an unknown number of components. Project combines **probabilistic modeling**, **deep learning**, and **transdimensional inference**.

Full publication list

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.

Full presentation list

Invited talks marked with *.

Talks at conferences:

19.* *Resolving and representing correlations between sources and between source classes in LISA data.*
LISA Without Frontiers, Sexten, Italy, 13/01/2026.

18.* *A roadmap of gravitational wave data analysis: The challenges of going to lower frequencies.*
Belgian-Dutch Gravitational Wave Meeting 2025, Nijmegen, The Netherlands, 28/10/2025.

17. *Unlocking the Science Objectives of Extreme Mass Ratio Inspirals.*
GR/Amaldi, Glasgow, UK, 18/07/2025.

16.* *From Nano- to Millihertz Gravitational waves: Bridging methods across the spectrum.*
GR/Amaldi, Glasgow, UK, 16/07/2025.
- Talk as part of the 2024 GWIC thesis prize.

15.* *Roadmap for the inclusion of Extreme Mass Ratio Inspirals in the LISA global fit.*
EMRIs within the LISA Global Fit - Part I, Astroparticule et cosmologie (APC), Paris, 25/03/2025.

14. *Exploring Transdimensional Sampling Techniques for Euclid Data Analysis: Insights from Gravitational Wave Astronomy.*
ESLAB Symposium and Euclid Consortium Meeting, Leiden, 25/03/2025.

13. *Prospects and Challenges of the Laser Interferometer Space Antenna.*
Space Science Workshop 17, Akersloot, Netherlands, 12/02/2025.

12.* *LISA data analysis highlight.*
LISA-Netherlands Community Day, Nikhef, Amsterdam, 10/10/2024.

11. *FastEMRIWaveforms: Waveform package for asymmetric binaries.*
15th LISA Symposium, Dublin, Ireland, 09/07/2024.

10.* *Challenges and prospects of future Pulsar Timing Array analyses.*
11th LISA Cosmology Working Group Workshop, Porto, Portugal, 20/06/2024.

9.* *Gravitational self-force: The two-body problem in the small mass ratio limit.*
GWnext 2024, Bejing, China, 05/03/2024.

8.* *Testing General Relativity with LISA observations.*
Asymmetric Binaries Meet Fundamental Astrophysics, L'Aquila, Italy, 22/09/2023.

7. *Beyond vacuum Extreme Mass Ratio Inspirals.*
1st Trieste Meeting on the Physics of Gravitational Waves, Trieste, Italy, 09/06/2023.
- Tutorial session.

6. *Fast EMRI Waveform package: New tools for millihertz gravitational-wave data analysis.*
LISA data analysis workshop: from classical methods to machine learning, Toulouse, France, 25/11/2022.

5.* *GPU Techniques to Accelerate GW Waveforms and Data Analysis Computations.*
LISA data analysis workshop: from classical methods to machine learning, Toulouse, France, 25/11/2022.
- Tutorial session.

4. *Probing accretion disk physics with Extreme Mass Ratio Inspirals.*
25th Capra Meeting on Radiation Reaction in General Relativity, Dublin, Ireland, 23/06/2022.

3. *Testing General Relativity with Extreme Mass Ratio Inspirals.*
EuCAPT Workshop: Gravitational wave probes of black hole environments, Rome, Italy, 16/06/2022.

2. *Assessing the impact of transient orbital resonances.*
24th Capra Meeting on Radiation Reaction in General Relativity, Online, 11/06/2021.

1. *Pulsar selection methods.*
EPTA spring meeting, Online, 24/03/2021.

Talks at department seminars:

11.* *The Need for Speed in Gravitational Wave Modelling and Data Analysis.*
Utrecht University, The Netherlands, 29/10/2025.

10.* *EMRIching our understanding of the Universe with gravitational wave observations of extreme mass ratio inspirals.*
Gravity Seminar, Birmingham University, UK, 09/07/2025.

9.* *Millihertz Gravitational Waves: Challenges and opportunities in the LISA Era.*
Quantum and Gravity Seminar, Radboud University, Nijmegen, The Netherlands, 23/04/2025.

8.* *Unlocking the science of Asymmetric Binaries with LISA.*
University of Balearic Islands, Palma de Mallorca, Spain, 11/04/2025.

7.* *Science with asymmetric binaries.*
University of Southampton, Southampton, 05/03/2025.

6.* *Millihertz Gravitational Waves: Challenges and Opportunities in the LISA Era.*
Perimeter Institute, Waterloo, 30/01/2025.

5.* *Challenges of LISA Data Analysis.*
Institute for Gravitational and Subatomic Physics (GRASP), Utrecht, 11/12/2024.

4.* *Gravitational Wave Observations in the Millihertz Regime: Prospects and Challenges of the Upcoming LISA Mission.*
GRAPPA Colloquium, Amsterdam, 11/11/2024.

3.* *With great precision comes great challenges: Gravitational Wave Observations of Extreme Mass Ratio Inspirals.*
TAPIR Seminar, Caltech, Pasadena, 08/12/2023.

2.* *Probing Accretion Physics with Gravitational Waves.*
OzGrav Seminar, online, 11/08/2023.

1.* *Extreme Mass Ratio Inspiral Waveforms in a nutshell.*
Amsterdam, The Netherlands, 01/2023.
- Two tutorial sessions of two hours each.