


# Shubham Kejriwal

PH.D. STUDENT · PHYSICS

 ORCID.ORG/0009-0004-5838-1886

National University of Singapore, Science Drive 4, Singapore 119077

✉ [shubhamkejriwal@u.nus.edu](mailto:shubhamkejriwal@u.nus.edu) |  [perturber.github.io/shubham/](https://github.com/perturber) |  [github.com/perturber](https://github.com/perturber)

## Professional Summary

Third-year Ph.D. candidate studying gravitational wave sources for the upcoming LISA mission. Experience in the LISA data analysis pipeline, modeling and inference of perturbative “beyond-vacuum-GR” effects, and search for electromagnetic counterparts of extreme-mass-ratio inspirals. Proficient in Bayesian statistics and machine learning with a working knowledge of general-relativistic waveform modeling.

## Education

### National University of Singapore (NUS)

PH.D. PHYSICS

Singapore  
2023 —

- Gravitational Waves Group, Department of Physics, Faculty of Science, NUS
- Advisor: Prof. Alvin J. K. Chua

### Shiv Nadar University

B.Sc. (RESEARCH) IN PHYSICS WITH A MINOR IN MATHEMATICS (DISTINCTION)

Delhi, India  
2018 — 2022

- Undergraduate Thesis: “[On the Effects of Relative Motion on Gravitational Waves from Extreme-Mass-Ratio Inspirals](#)”.
- Advisor: Prof. Alvin J. K. Chua

## Teaching and Mentoring

### TEACHING AND TEACHING ASSISTANCE

- HS1502 “Conceptual Introduction to Machine Learning”, NUS.  
(2023-24: Semester 2, 2024-25: Semester 1).
- COS1000 “Computational Thinking for Scientists”, NUS.  
(2023-24: Semester 1 and 2, 2024-25: Semester 1).
- PC5252 “Bayesian Statistics and Machine Learning”, NUS.  
(2023-24: Semester 1, 2024-25: Semester 2).

### STUDENT MENTORING

- (co-advisor) Ms. Sheena Abigail, Final Year Project, M.Sc. Physics, NUS (2024-25).

## Publications

Total 5 articles available as preprints or publications. Also see [inspire-HEP](#) and [arXiv](#).

- S. Kejriwal**, F. Duque, A. J. K. Chua, J. Gair (2025)  
*Bias-Corrected Importance Sampling for Inferring Beyond Vacuum-GR Effects in Gravitational Wave Sources*; ([arXiv](#)).
- F. Duque, **S. Kejriwal**, L. Sberna, L. Speri, J. Gair (2024)  
*Constraining accretion physics with gravitational waves from eccentric extreme-mass-ratio inspirals*; ([PRD](#)).
- D. R. Pasham, **S. Kejriwal**, E. Coughlin, V. Witzany, A. J. K. Chua, M. Zająček, T. Wevers, Y. Ajay (2024)  
*Alive and Strongly Kicking: Stable X-ray Quasi-Periodic Eruptions from eRO-QPE2 over 3.5 Years*; ([arXiv](#)).
- S. Kejriwal**, V. Witzany, M. Zająček, D. R. Pasham, A. J. K. Chua. (2024)  
*Repeating Nuclear Transients as Candidate Electromagnetic Counterparts of LISA Extreme Mass Ratio Inspirals*; ([MNRAS](#)).
- S. Kejriwal**, L. Speri, A. J. K. Chua. (2024)  
*Impact of Correlations on the Modeling and Inference of Beyond Vacuum-GR Effects in Extreme-Mass-Ratio Inspirals*; ([PRD](#)).

## Presentations (\*Remote, † Scheduled) \_\_\_\_\_

### TALKS

2025

- † [EMRI Search and Inference within the LISA Global Fit - Part I](#), Laboratoire Astroparticule et Cosmologie (APC), Paris, France.
- † Seminar Talk, Laboratoire Astroparticule et Cosmologie (APC), Paris, France.
- [245th American Astronomical Society Meeting](#), Washington D.C., Special Session on Repeating Transients, (Invited Review Talk, Declined).

2024

- LISA Meeting Talk, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Potsdam, Germany (Invited).
- [15th International LISA Symposium 2024](#), University College, Dublin, Ireland.
- [17th Marcel Grossmann Meeting \(MGXVII\)](#), The ‘Gabriele d’Annunzio’ University, Italy (Invited, Declined).
- [27th Capra Meeting on Radiation Reaction in General Relativity](#), NUS, Singapore.
- [LIGO Seminar Talk](#), California Institute of Technology, California, USA.
- \*Gravity Theory Group Seminar Talk, University of Illinois, Urbana-Champaign, Illinois, USA (Invited).

2023

- [\\*Amaldi15 - Premiere International Conference on Gravitational Waves](#).
- [1st Trieste Meeting on the Physics of Gravitational Waves](#), SISSA - Scuola Internazionale Superiore Di Studi Avanzati, Trieste, Italy.

### POSTERS

2024

- Faculty of Science 95th Anniversary Symposium, Department of Physics, NUS, Singapore.
- Physics Engagement Camp, Department of Physics, NUS, Singapore.

### DISCUSSIONS

2025

- [EMRI Search and Inference within the LISA Global Fit - Part I](#), Data Analysis Strategies Discussion Session Co-Chair.

2024

- [27th Capra Meeting on Radiation Reaction in General Relativity](#), NUS, Singapore. Data Analysis Discussion Session Co-Chair.

## Honors \_\_\_\_\_

### AWARDS

- NUS Department of Physics Best Researcher Award (2025).
- Second Runner-Up, 3-Minute Thesis, NUS Final (2024).
- Dean’s List Academic Excellence Award, Shiv Nadar University (2019, 2020).

### SCHOLARSHIPS

- NUS Research Scholarship (2023-2027).

## Other Contributions \_\_\_\_\_

### ORGANIZATION

- [AstroChallenge Singapore \(2025\)](#), Project Round Judge.

- **27th Capra Meeting on Radiation Reaction in General Relativity (2024)**, Local Organizing Committee.
- **Annual Physics Conference (2023 and 2025)**, Department of Physics, NUS, Singapore, Organizing Committee.

## COLLABORATIONS

- LISA Consortium (core member) — Waveform working group; LISA Asia Member Group.
- LISA Figures of Merit, Science Objective 3: “Probe the dynamics of dense nuclear clusters using EMRIs”.
- **FastEMRIWaveforms (FEW)** core contributor.

## PARTICIPATION

- **Mathematical Methods for the General Relativistic Two-body Problem**, August 2025, NUS, Singapore.
- **Enabling Future Gravitational Wave Astrophysics in the Milli-Hertz Regime**, July 2025, MIAPbP, Munich, Germany.
- **EMRI Search and Inference within the LISA Global Fit - Part I**, June 2025, APC, Paris, France.
- **Beyond the Horizon: Testing the Black Hole Paradigm**, March 2025, ICTS-TIFR, Bengaluru, India.
- **LISA Sprint Workshop**, April 2024, California Institute of Technology, California, USA.

## References

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- **PROF. ALVIN J. K. CHUA,**  
(Ph.D. Advisor)

NATIONAL UNIVERSITY OF SINGAPORE  
SINGAPORE-119077  
[alvincjk@nus.edu.sg](mailto:alvincjk@nus.edu.sg)

- **PROF. ENRICO BARAUSSE,**  
(Mentor)

SISSA - SCUOLA INTERNAZIONALE  
SUPERIORE DI STUDI AVANZATI  
TRIESTE, ITALY-32136  
[barausse@sissa.it](mailto:barausse@sissa.it)

- **PROF. JONATHAN GAIR,**  
(Mentor)

MAX PLANCK INSTITUTE FOR  
GRAVITATIONAL PHYSICS,  
ALBERT EINSTEIN INSTITUTE (AEI)  
POTSDAM, GERMANY-14476  
[jonathan.gair@aei.mpg.de](mailto:jonathan.gair@aei.mpg.de)