


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 |  [perturber.github.io/shubham/](https://github.com/shubham/) |  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. Swathi Ganesh, B.Sc. Physics, Shiv Nadar University. Short term project (2025).
- (co-advisor) Ms. Sheena Abigail, M.Sc. Physics, NUS. Final year project (2024-25).

Publications

Total 6 articles available as preprints or publications. Also see [inspire-HEP](#) and [arXiv](#).

- C. E. A. Chapman-Bird, L. Speri, Z. Nasipak, O. Burke, M. L. Katz, A. Santini, **S. Kejriwal**, et al. (2025)
Efficient Waveforms for asymmetric-mass eccentric equatorial inspirals into rapidly-spinning black holes; ([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) _____

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

- **Enabling Future GW Astrophysics in the mHz Regime**, MIAPbP, Garching, Germany. Discussion on including environmental effects in GW waveforms (co-chair).
- **EMRI Search and Inference within the LISA Global Fit - Part I**, APC, Paris. 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).

Contributions

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.

OTHERS

- Referee for Physical Review D.
- **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.

References

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

NATIONAL UNIVERSITY OF SINGAPORE
SINGAPORE-119077
alvincjk@nus.edu.sg

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

SISSA - SCUOLA INTERNAZIONALE
SUPERIORE DI STUDI AVANZATI
TRIESTE, ITALY-32136
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