


# Shubham Kejriwal

PH.D. STUDENT · PHYSICS

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## 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
- Supervisor: 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**”.
- Supervisor: 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 7 articles available as preprints or publications. Also see [inspire-HEP](#) and [arXiv](#).

- J. Chakraborty, L. V. Drummond, M. Bonetti, A. Franchini, **S. Kejriwal**, et al. (2025)  
*Prospects for EMRI/MBH parameter estimation using Quasi-Periodic Eruption timings*; ([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*; ([PRD](#)).
- 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. Zajacěk, 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. Zjaczek, 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

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### TALKS

2025

- Astroparticle Physics Group Seminar Talk, SISSA, Trieste, Italy (invited).
- Gravitational Physics Group Talk, ETH Zurich, Switzerland (invited).
- [EMRI Search and Inference within the LISA Global Fit - Part I](#), University of Paris, Paris, France.
- Astroparticle and Cosmology Laboratory (APC) Seminar Talk, 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 (AEI), 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](#), Caltech, California, USA.
- Gravity Theory Group Seminar Talk, University of Illinois, Urbana-Champaign (UIUC), Illinois, USA (remote, invited).

2023

- [Amaldi15 - Premiere International Conference on Gravitational Waves](#) (remote).
- [1st Trieste Meeting on the Physics of Gravitational Waves](#), SISSA, 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. “Including environmental effects in GW waveforms” (co-chair).
- [EMRI Search and Inference within the LISA Global Fit - Part I](#), Astroparticle and Cosmology Laboratory (APC), Paris, France. “Data Analysis Strategies” (co-chair).

2024

- [27th Capra Meeting on Radiation Reaction in General Relativity](#), NUS, Singapore. “Priorities for EMRI science” (co-chair).

## Honors

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### AWARDS

- NUS Department of Physics Best Researcher Award (2025).
- Dean’s List Academic Excellence Award, Shiv Nadar University (2019, 2020).

## SCHOLARSHIPS

- NUS Research Scholarship (2023-2027).

## Contributions

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### COLLABORATIONS

- LISA Consortium (core member) — Waveform WG, Data Analysis WG, Fundamental Physics WG; LISA Asia Member.
- LISA Figures of Merit, Science Objective 3: “Probe the dynamics of dense nuclear clusters using EMRIs”.
- [StableEMRIFisher \(SEF\)](#) Core Contributor.
- [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, Astrophysics and Cosmology Laboratory (APC), Paris, France.
- [Beyond the Horizon: Testing the Black Hole Paradigm](#), March 2025, ICTS-TIFR, Bengaluru, India.
- [LISA Sprint Workshop](#), April 2024, Caltech, 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

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

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(Mentor)

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

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