



Avinash Tiwari, Ph.D. Student




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Current Affiliations

2021 –  Inter-University Centre for Astronomy and Astrophysics, Pune.
2022 –  LIGO-Virgo-Kagra (LVK) Collaboration and LIGO-India Scientific Collaboration (LISC).







Education

2021 –  **Ph.D.**, Inter-University Centre for Astronomy and Astrophysics, Pune.
2019 – 2021  **M.Sc. Physics**, Indian Institute of Technology Guwahati, Guwahati.
2016 – 2019  **B.Sc. Physics, Mathematics, and Computer Science**, University of Allahabad, Prayagraj.



Skills

Languages  English, Hindi, and Awadhi.
Coding  Python, C, \LaTeX .
Web Dev  HTML, CSS, GITHUB PAGES.
Packages  BILBY, BILBY_PIPE, BILBY_TGR, GWPOPULATION, EMCEE, DYNESTY.

Accomplishments

-  **Graduate Aptitude Test in Engineering** (GATE 2021): All India Rank 209 in Physics.
-  **Junior Research Fellowship** (JRF)-CSIR: All India Rank 89 in Physical Sciences, Joint CSIR - UGC NET JUNE 2020 (held in November 2020).
-  **IASC** (November 9 – December 4, 2020): Member of the team “Delhi University” in the “DST-Rajasthan Asteroid Search Campaign” organised by DST-Rajasthan in collaboration with the International Astronomical Search Collaboration (IASC).
-  **IASC** (August 12 – September 8, 2020): member of the team “IIT Guwahati” in the “DST-Rajasthan Asteroid Search Campaign” organised by DST-Rajasthan in collaboration with the International Astronomical Search Collaboration (IASC).
-  **Institute Merit-cum-Means** (McM) Scholarship: awarded in both years of M.Sc. (2019-21) by the India Institute of Technology Guwahati on merit-cum-means basis for being in the top 25%.
-  **Joint Admission Test for M.Sc.** (JAM) 2019: All India Rank 236 in Physics.

Conferences

-  **GR24 - Amaldi16** (July 14- 18, 2025): Talk on “Profiling stellar environments of gravitational wave sources”.
-  **ICGC-2023** (December 6 – December 9): Talk on “Probing globular clusters and other astrophysical environments with gravitational waves emitted by accelerated compact binary mergers”.

Conferences (continued)

- **Amaldi15** (July 17- 21, 2023): Talk on “Probing globular clusters and other astrophysical environments with gravitational waves emitted by accelerated compact binary mergers”.
- **IAGRG32** (December 19 - 21, 2022): Poster presentation and a Flash Talk on “Waltzing binaries: probing line-of-sight acceleration of merging compact objects with gravitational waves”.

Workshops and Seminars

- **Last Friday Talks at IUCAA** (September 27, 2024): “Profiling stellar environments of gravitational wave sources”.
- **AEI Colloquium** (August 22, 2024), AEI Hanover: “Profiling stellar environments of gravitational wave sources”.
- **New ideas on the ORIGIN of BLACK HOLE MERGERS** (August 12 – August 16, 2024), NBI Copenhagen: “Talk on Profiling stellar environments of gravitational wave sources”.
- **Last Friday Talks at IUCAA** (July 28, 2023): “Probing globular clusters and other astrophysical environments with gravitational waves emitted by accelerated compact binary mergers”.
- **LUNAR GRAVITATIONAL-WAVE DETECTION** (April 17 - 20, 2023), Ramanujan Lecture Hall, ICTS Bengaluru.
- **Last Friday Talks at IUCAA** (March 31, 2023): “Waltzing binaries: probing line-of-sight acceleration of merging compact objects with gravitational waves”.
- **Online Seminar at ICTS**, Bengaluru (December 15, 2022): “Waltzing binaries: probing line-of-sight acceleration of merging compact objects with gravitational waves”.

Courses Tutored

- PHY-IC481 - General Relativity at IUCAA.
- PHY-IE485 - Elective course - Cosmology at IUCAA.

Research Publications

Short author works

- 1 A. Tiwari, P. Chanda, S. J. Kapadia, S. Adhikari, A. Vijaykumar, and B. Dasgupta, “Profiling Dark Matter Spikes with Gravitational Waves from Accelerated Binaries,” Aug. 2025. arXiv: 2508.03803 [hep-ph].
- 2 A. Tiwari, A. Vijaykumar, S. J. Kapadia, S. Ghosh, and A. B. Nielsen, “A pipeline to search for signatures of line-of-sight acceleration in gravitational wave signals produced by compact binary coalescences,” Jun. 2025. arXiv: 2506.22272 [astro-ph.HE].
- 3 A. Tiwari, A. Vijaykumar, S. J. Kapadia, S. Chatterjee, and G. Fragione, “Profiling stellar environments of gravitational wave sources,” Jul. 2024. arXiv: 2407.15117 [astro-ph.HE].
- 4 A. Tiwari, A. Vijaykumar, S. J. Kapadia, G. Fragione, and S. Chatterjee, “Accelerated binary black holes in globular clusters: forecasts and detectability in the era of space-based gravitational-wave detectors,” *Mon. Not. Roy. Astron. Soc.*, vol. 527, no. 3, pp. 8586–8597, 2023. [DOI: 10.1093/mnras/stad3749](#). arXiv: 2307.00930 [astro-ph.HE].
- 5 A. Vijaykumar, A. Tiwari, S. J. Kapadia, K. G. Arun, and P. Ajith, “Waltzing Binaries: Probing the Line-of-sight Acceleration of Merging Compact Objects with Gravitational Waves,” *Astrophys. J.*, vol. 954, no. 1, p. 105, 2023. [DOI: 10.3847/1538-4357/acd77d](#). arXiv: 2302.09651 [astro-ph.HE].