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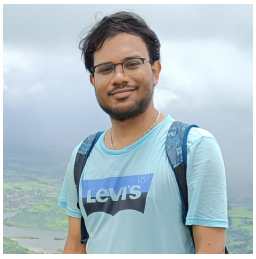

About me

I am a final year Ph.D. candidate at the Tata Institute of Fundamental Research, Mumbai, India. I have been engaged in collaborative work with the Indian Pulsar Timing Array (InPTA), the International Pulsar Timing Array (IPTA), and the LIGO-Virgo-KAGRA Collaboration (LVK). My scientific interests include nano and hecto-Hertz Gravitational Wave Astronomy, Pulsar timing, and modeling Gravitational Wave sources with Post-Newtonian approximation.

Education

Jul 2019 – present
Ph.D. in Physics, Tata Institute of Fundamental Research, Department of Astronomy and Astrophysics
Thesis title: *Modeling Hecto and Nano-Hertz Gravitational Wave sources and examining their observational implications*
Advisor: Prof. A. Gopakumar

May 2014 – Aug 2019
BS-MS Dual Degree in Physics, Indian Institute of Science Education and Research, Bhopal
Studied: *Physics (Major), Mathematics, and Chemistry*

Research Interests

Gravitational Waves
Pulsar Timing Array:
→ Developing new methods to calculate accurate Pulsar Timing Array (PTA) signals induced by hyperbolic encounters of Black Holes (BH) and BH binaries in eccentric orbit.
→ Searching for Burst with Memory (BWM) events in PTA data
→ Searing for isolated Supper Massive Black-Hole Binaries (SMBHB) in eccentric orbit with the PTA data-set
→ Searching for Ultra Light Dark Matter (ULDM) in PTA data-set
LIGO-Virgo-KAGRA:
→ Identifying the BWM signature in LIGO-Virgo-KAGRA dataset

Skills

Languages	Bengali (native), English, Hindi
Programming Languages	`Python, bash, C,` LaTeX
Computing Software	`MATHEMATICA, MAPLE`
Astrophysical Software	`ENTERPRISE, PINT, TEMPO2`
Telescope Observations	Upgraded Giant Metrewave Radio Telescope

Research Publications

Peer-Reviewed Publications with Major Contribution

1. **Dandapat**, **S.**, Ebersold, M., Susobhanan, A., Rana, P., Gopakumar, A., Tiwari, S., … Kolhe, N. (2023). Gravitational waves from black-hole encounters: Prospects for ground and galaxy-based observatories. *Phys. Rev. D*, *108*, 024013. doi:10.1103/PhysRevD.108.024013
2. Cho, G., **Dandapat**, **S.**, & Gopakumar, A. (2022). Third order post-newtonian gravitational radiation from two-body scattering: Instantaneous energy and angular momentum radiation. *Phys. Rev. D*, *105*, 084018. doi:10.1103/PhysRevD.105.084018

Non-Peer-Reviewed Publications with Major Contribution

1. Agazie, G. et al. (2023). Comparing recent PTA results on the nanohertz stochastic gravitational wave background. arXiv: 2309.00693 [astro-ph.HE]

Other Peer-Reviewed Publications

1. Srivastava, A. et al. (2023). Noise analysis of the Indian Pulsar Timing Array data release I. *Phys. Rev. D*, *108*(2), 023008. doi:10.1103/PhysRevD.108.023008. arXiv: 2303.12105 [astro-ph.HE]
2. Chandra Joshi, B. et al. (2022). Nanohertz gravitational wave astronomy during SKA era: An InPTA perspective. *J. Astrophys. Astron.*, *43*(2), 98. doi:10.1007/s12036-022-09869-w. arXiv: 2207.06461 [astro-ph.HE]
3. Nobleson, K. et al. (2022). Low-frequency wideband timing of InPTA pulsars observed with the uGMRT. *Mon. Not. Roy. Astron. Soc.*, *512*(1), 1234–1243. doi:10.1093/mnras/stac532. arXiv: 2112.06908 [astro-ph.IM]
4. Tarafdar, P. et al. (2022). The Indian Pulsar Timing Array: First data release. *Publ. Astron. Soc. Austral.*, *39*, e053. doi:10.1017/pasa.2022.46. arXiv: 2206.09289 [astro-ph.IM]
5. Singha, J. et al. (2021). Evidence for profile changes in PSR J1713+0747 using the uGMRT. *Mon. Not. Roy. Astron. Soc.*, *507*(1), L57–L61. doi:10.1093/mnrasl/slab098. arXiv: 2107.04607 [astro-ph.HE]

Non-Peer-Reviewed Publications

1. Antoniadis, J. et al. (2023a). The second data release from the European Pulsar Timing Array II. Customised pulsar noise models for spatially correlated gravitational waves. arXiv: 2306.16225 [astro-ph.HE]
2. Antoniadis, J. et al. (2023b). The second data release from the European Pulsar Timing Array III. Search for gravitational wave signals. arXiv: 2306.16214 [astro-ph.HE]
3. Antoniadis, J. et al. (2023c). The second data release from the European Pulsar Timing Array IV. Search for continuous gravitational wave signals. arXiv: 2306.16226 [astro-ph.HE]
4. Antoniadis, J. et al. (2023d). The second data release from the European Pulsar Timing Array: V. Implications for massive black holes, dark matter and the early Universe. arXiv: 2306.16227 [astro-ph.CO]
5. Paladi, A. K. et al. (2023). Multi-band Extension of the Wideband Timing Technique. arXiv: 2304.13072 [astro-ph.IM]

Seminars and Conference Presentations

2023 **"Characterizing Burst with Linear Memory Events with LIGO-Virgo-KAGRA and Pulsar Timing Array Observatories"**; Amaldi15 virtual conference; July 17-21, 2023.

Seminars and Conference Presentations (continued)

- "**Searching Burst with memory event in IPTA dataset and Compairing PTA posteriors**"; IPTA Science meeting; 19-23 June, 2023.

- "**Compairing PTA posteriors**"; IPTA GWA hackweek on 3P+ comparisons virtually on zoom; 6-8 March, 2023.

2022 - "**Stochastic gravitational wave background spectrum due to supermassive black hole binaries in precessing eccentric orbits**"; Gravitational Wave Orchestra in-person held on UCLouvain, Belgium; Sep 8-9,2022.

2021 - "**Modeling GW burst with linear memory events**"; EPTA 2021 Winter meeting virtually on zoom Dec 6-8, 2021 and Astronomy Society of India meeting in-person held on **IIT Roorkee**; Mar 25-29, 2021.

- "**Effect of relativistic pericentre advance on the SGWB due to eccentric SMBH binaries**"; EPTA 2021 Summer meeting virtually on zoom; Apr 21-23, 2021.

Important roles

2023- - Co leading the **IPTA DR3 Search** for Gravitational Wave Burst with memory project.

2022-2023 - As the **Deputy Managing Leader (DML)** responsible for both the data reduction working group and the Data backup group within the InPTA collaboration, my duties involve overseeing the management of all processed pinta output files from the uGMRT dataset and ensuring their proper analysis. This involves conducting reviews of the backup procedures for the raw data as well.

Research Visit

2022 - Visited Prof. Jetzer's group at University of Zürich from **15 th July to 30th September, 2022** for LIGO-Virgo-KAGRA (LVK) collaborative work.

References

Available on Request