Nobleson Kunjappy

Postdoctoral Researcher

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RESEARCH INTERESTS

Gravitational wave astronomy using pulsar timing arrays; noise modelling and Bayesian data analysis for PTA datasets; neutron star structure and properties in modified gravity theories; precision pulsar timing with low-frequency radio observations.

EDUCATION

Ph.D. Jan 2018 -- Nov 2023

Birla Institute of Technology & Science (BITS), Pilani, Hyderabad Campus, India

Thesis: "Advanced Studies on Neutron Stars and Pulsars"

M.Sc. in Astronomy & Astrophysics Aug 2016 -- Jun 2018

Osmania University, Hyderabad, India

Thesis: "Parametric study of short-period eclipsing Post Common Envelope Binaries"

M.Sc. in Mathematics Jun 1998 -- Apr 2000

Osmania University, Hyderabad, India

B.Sc. in Mathematics, Physics & Chemistry Jun 1995 -- Apr 1998

Govt. Giriraj College (Osmania University), Nizamabad, India

RESEARCH POSITIONS

Postdoctoral Researcher Nov 2023 -- Nov 2025

Kumamoto University, Kumamoto, Japan

- InPTA Data Release 2: dataset processing and timing analysis
- InPTA DR2 Noise Analysis: customised single-pulsar noise modelling
- IPTA Data Combination: contributing to the international data release

TEACHING EXPERIENCE

Teaching Assistant: Introduction to Radio Astronomy 2022

BITS Pilani, Hyderabad Campus, India

- Introduction to Radio Astronomy course for masters students

Teaching Assistant: Introduction to Astrophysics 2022

BITS Pilani, Hyderabad Campus, India

- Introduction to Astrophysics course for masters students

Teaching Assistant: PHY F110 Physics Laboratory 2019 -- 2021

BITS Pilani, Hyderabad Campus, India

- Classical Physics laboratory course for undergraduate students (40 hours per semester)

SELECTED PUBLICATIONS

Full list: ORCID 0000-0003-2715-4504 | 20 peer-reviewed publications

First-Author Papers

[1] K. Nobleson, S. Banik, T. Malik, "Unveiling a universal relationship between the f(R) parameter and neutron star properties", Phys. Rev. D 107, 124045 (2023)

[2] K. Nobleson, N. Agarwal, R. Girgaonkar, et al., "Low-frequency wideband timing of InPTA pulsars observed with the uGMRT", MNRAS 512(1), 1234-1243 (2022)

[3] K. Nobleson, T. Malik, S. Banik, "Tidal deformability of neutron stars with exotic particles within a density dependent relativistic mean field model in R-squared gravity", JCAP 2021(08), 012 (2021)

[4] K. Nobleson, A. Ali, S. Banik, "Comparison of perturbative and non-perturbative methods in f(R) gravity", Eur. Phys. J. C 82, 32 (2022)

Co-Lead Papers

[5] P. Rana, P. Tarafdar, K. Nobleson, et al., "The Indian Pulsar Timing Array Data Release 2: I. Dataset and Timing Analysis", PASA 42, e108 (2025)

[6] P. Tarafdar, K. Nobleson, P. Rana, et al., "The Indian Pulsar Timing Array: First data release", PASA 39, e053 (2022)

[7] A.K. Paladi, C. Dwivedi, P. Rana, K. Nobleson, et al., "Multiband extension of the wideband timing technique", MNRAS 527(1), 213-231 (2023)

Selected Co-Author Papers

[8] J. Antoniadis, et al. (EPTA & InPTA), "The second data release from the European Pulsar Timing Array: III. Search for gravitational wave signals", A&A 678, A50 (2023)

[9] J. Antoniadis, et al. (EPTA & InPTA), "The second data release from the European Pulsar Timing Array: IV. Implications for massive black holes, dark matter, and the early Universe", A&A 685, A94 (2024)

[10] G. Agazie, et al. (IPTA), "Comparing Recent Pulsar Timing Array Results on the Nanohertz Stochastic Gravitational-wave Background", ApJ 966(1), 105 (2024)

[11] A. Srivastava, et al., "Noise analysis of the Indian Pulsar Timing Array data release I", Phys. Rev. D 108, 023008 (2023)

[12] F. Iraci, et al. (EPTA & InPTA), "Combining the second data release of the European Pulsar Timing Array with low-frequency pulsar data", A&A 704, A109 (2025)

[13] A. Susobhanan, et al., "pinta: The uGMRT data processing pipeline for the Indian Pulsar Timing Array", PASA 38, e017 (2021)

TALKS & PRESENTATIONS

International Pulsar Timing Array (IPTA) 2025

- K. Nobleson, et al., "The Indian Pulsar Timing Array Data Release 2: II. Noise Analysis" (Presenter)

32nd Meeting of IAGRG, 2022

- Nobleson K., Malik T., Banik S., "Tidal Deformability of Neutron Stars in R-Squared Gravity" (Presenter)

IPTA Catchup Meeting, 2022

- Tarafdar P., et al., "The Indian Pulsar Timing Array: First data release" (Presenter)

Research Facility Training Program, Osmania University, 2022

- "Neutron stars as tools to study Advanced Astrophysics" (Invited Talk)

Science at Low Frequencies VIII, 2021

- Nobleson K., et al., "Low-frequency Wideband Timing on uGMRT Data" (Presenter)

27th Intl. Conf. on Advances in Relativity and Cosmology, 2021

- Nobleson K., Malik T., Banik S., "Tidal deformability of NS in R-squared gravity" (Presenter)

Astronomical Society of India, 2020

- Nobleson K., Ali A., Banik S., "Neutron Stars with realistic EoS in f(R) theories of gravity" (Presenter)

Compact Stars in QCD Phase Diagram VIII, ICTS Bangalore, 2020

- Attendee

PRIOR EMPLOYMENT

Graphic Designer May 2005 -- Aug 2016

Deloitte Support Services India Pvt. Ltd., Hyderabad, India

- Designed marketing materials (print and digital) for branding and visual identity
- Mentored junior colleagues and managed designer-client communications

Medical Transcriptionist / Proofreader Aug 2000 -- May 2005

Vasant Scribes Pvt. Ltd., Hyderabad, India

- Transcribed and proofread medical reports with high accuracy across multiple specialties

PROFESSIONAL MEMBERSHIPS

- Astronomical Society of India (ASI), 2018 -- present
- Indian Pulsar Timing Array (InPTA), 2019 -- present
- International Pulsar Timing Array (IPTA), 2021 -- present