

CHAYAN CHATTERJEE

CONTACT DETAILS

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CURRENT POSITION

A.I. for New Messengers Postdoctoral Research Fellow December 2023 - present

Joint appointment with the Department of Physics and Astronomy, and Data Science Institute, Vanderbilt University, United States of America.

EDUCATION

- **Doctor of Philosophy in Physics** February 2020 - November 2023
The University of Western Australia, Australia
Thesis title: [Enabling rapid discovery of gravitational waves using machine learning.](#)
Supervisors: Prof. Linqing Wen, Prof. Amitava Datta.
- **Master of Science in Physics** 2016 - 2019
Presidency University, Kolkata, India
Specialization: Astrophysics and Cosmology
Thesis: Dark matter self interaction and its impact on large scale structures.
List of Courses: http://www.presiuniv.ac.in/web/Physics_MSc.pdf
- **Bachelor of Science (Hons) in Physics** 2013 - 2016
Presidency University, Kolkata
Thesis: The Hertzsprung-Russell diagram of stars in the SDSS Stripe-82 Catalog.
List of Courses: http://www.presiuniv.ac.in/web/Physics_BSc_Major.pdf

PUBLICATIONS

Citations from Google Scholar

1. “Navigating Unknowns: Deep Learning Robustness for Gravitational Wave Signal Reconstruction” - Chayan Chatterjee and Karan Jani (2024). - *accepted for publication in The Astrophysical Journal.*
2. “Reconstruction of binary black hole harmonics in LIGO using deep learning” - Chayan Chatterjee and Karan Jani (2024). [[Astrophys. J, 969 25](#)] - *Citations: 1*
3. “Pre-merger sky localization of gravitational waves from binary neutron star mergers using deep learning” - Chayan Chatterjee and Linqing Wen (2023) [[Astrophys. J, 959 76](#)] - *Citations: 3.*
4. “Rapid localization of gravitational wave sources from compact binary coalescences using deep learning” - Chayan Chatterjee, Linqing Wen, Damon Beveridge, Foivos Diakogiannis, Kevin Vinsen (2023) [[Astrophys. J, 959 42](#)] - *Citations: 4.*
5. “Rapid mass parameter estimation of binary black hole coalescences using deep learning” - Alistair McLeod, Daniel Jacobs, Chayan Chatterjee, Linqing Wen, and Fiona Panther (2022). [[ArXiv:2201.11126](#)] - *Under review in Physical Review D.*

6. “*Extraction of binary black hole gravitational wave signals from detector data using deep learning*” - Chayan Chatterjee, Linqing Wen, Foivos Diakogiannis, Kevin Vinsen (2021) [[Phys. Rev. D 104, 064046](#)] - Citations: 25.
7. “*Enhancing gravitational-wave science with machine learning*” - Elena Cuoco et al. (2020) [[2021 Mach. Learn.: Sci. Technol. 2 011002](#)] - Citations: 155.
8. “*Using deep learning to localize gravitational wave sources*” - Chayan Chatterjee, Linqing Wen, Kevin Vinsen, Manoj Kovalam, Amitava Datta (2019) [[Phys. Rev. D 100, 103025](#)] - Citations: 41.

SCHOLARSHIPS AND AWARDS

- **A.I. for New Messengers Postdoctoral Fellowship 2023** - *Postdoctoral Fellowship by Vanderbilt University (2023-2026)*.
- **UWA Postgraduate Student Association Travel Award** - *for international academic visits and conference participation (2023)*.
- **OzGrav Travel Award** - *for international academic visits and conference participation (2022)*.
- **UWA Postgraduate Student Association Research Week Best Talk Award** - *Runner-Up (2022)*.
- **J-P Macquart Best Student Talk Award** - *The Australian National Institute for Theoretical Astrophysics Conference - Runner-Up (2022) and Winner (2021)*.
- **Australian Mathematical Sciences Institute Summer School - Best Student Talk Award** - *Winner (2022)*.
- **OzGrav Outreach Superstar Award (UWA)** - *Winner (2021)*.
- **The University of Western Australia Three Minute Thesis (3MT) Competition Award** - *Winner (2020) and People’s Choice Award - Winner (2020)*.
- **Scholarship for International Research Fees and International Living Allowance Scholarship for 2020** - *Awarded by The University of Western Australia.*

COMMITTEE AND ACADEMIC SERVICES

1. **Co-judge** - *Visualize Your Thesis Competition, The University of Western Australia (2024)*.
2. **Program Chair** - *Gravitational Wave Inference Research Program, OzGrav - ARC Center of Excellence for Gravitational Wave Discovery (2023)*.
3. **Journal Referee** - *The Astrophysical Journal Letters, International Journal of Modern Physics D, Science China Physics, Mechanics and Astronomy.*
4. **Committee Member** - *Australian National Institute for Theoretical Astrophysics (2021 - 2022)*.
5. **Early Career Researcher Representative** - *OzGrav, University of Western Australia (2021 - 2022)*.
6. **Postgraduate Student Research Representative** - *Postgraduate Student Association, University of Western Australia Student Guild (2020 - 2021)*.
7. **Mentor and Organizer of NASA Space Apps Challenge, Perth (2021)**.
8. **Co-ordinator of Presidency University Physics League** - *Official Physics club run by students of the Department of Physics, Presidency University (2015 - 2017)*.

TEACHING/SUPERVISION

1. **Lecturer** - Gravitational Wave Astronomy (PHYS4420) at University of Western Australia. 2022-2023
2. **Teaching Facilitator** - Our Universe (SCIE1121) at University of Western Australia. 2020 - 2023.
3. **Research Supervision** - Summer Down Under Research Internship (SDURI), student dissertations at University of Western Australia. 2020 - 2023.

INVITED TALKS

- “*Parameter Estimation of Gravitational Wave Sources Using Deep Learning*”
University of Wisconsin-Milwaukee, USA - CGCA seminar talk October, 2021
- “*Denoising and Parameter Estimation of Gravitational Waves Using Deep Learning*”
Western Sydney University, Australia - Department of Physics seminar talk
Link: <https://www.youtube.com/watch?v=GMDUwP15dKs> August, 2021
- “*How do we detect and localize gravitational waves in real-time?*”
Presidency University, Kolkata, India
Link: <https://www.youtube.com/watch?v=I-RKJfcTuJA> December, 2020

SELECTED INTERNATIONAL CONFERENCE PRESENTATIONS

1. Oral presentation, “*Real-time and pre-merger sky localization of gravitational waves from compact binary coalescences using deep learning*” at 241st American Astronomical Society (AAS) Meeting January, 2023.
2. Oral presentation, “*Real-time localization of gravitational waves from compact binary coalescences using deep learning*” at American Physical Society (APS) April Meeting April, 2022.
3. Oral presentation, “*Denoising and Localization of Gravitational Wave Sources Using Deep Learning*” at GW-MULL meeting July, 2021.
4. Oral presentation, “*Using Deep Learning to Localize Gravitational Wave Sources*” at LIGO-Virgo KAGRA (LVK) Collaboration Meeting September, 2020

MEDIA RELEASES

- Invited guest at talk show - *Curiosity Killed the Rat* (2021)
- Invited guest at podcast - *Astrophiz: An Astronomy Podcast* (2021)
- Invited guest at science talk show - *The Uncertainty Principle Presents: Science After Dark* - Perth Fringe Festival (2021).
- Featured article - “*Algorithms now helping find Gravitational Wave sources*” - Space Australia (2019).

SKILLS

Languages	Bengali (native), English (bilingual, fluent), Hindi (advanced).
Programming Languages	Python, FORTRAN, GNU Bash, L ^A T _E X.
Software Experience	TensorFlow, PyTorch, LALInference, BILBY, GADGET2.
Operating Systems	Linux (Ubuntu), Windows.