Anjana Ashok

Max-Planck-Institut für
Gravitationsphysik (Albert Einstein
Institut),
Callinstraße 38, 30167, Hannover,
Germany
anjana.ashok@aei.mpg.de

Professional

Max Planck Institute for Gravitational Physics — Hannover, Germany
Junior Scientist / Post-Doc, Pulsar Timing Arrays — Feb 2024 –Present

Max Planck Institute for Gravitational Physics — Hannover, Germany
Junior Scientist / Post-Doc, Continuous Gravitational Waves — May 2023–Jan 2024

Education

Max Planck Institute for Gravitational Physics — Hannover, Germany
Ph.D. Studies under the supervision of Prof.Dr.Maria Alessandra Papa — October 2018–May 2023

- Thesis: "Targeted searches for continuous gravitational waves"
- Dissertation: Sehr-Gut (Magna cum Laude)
  Disputation : Ausgezeichnet (Summa cum Laude)
  Overall : Sehr-Gut (Magna cum Laude)

National Institute of Technology — Karnataka, India
M.Sc. in Physics — 07-2015–05-2017

- Thesis: "Einstein's Gravity, Generation of gravitational waves and an introduction to Post-Newtonian Approximation"
- CGPA: 9.17/10.00

University of Calicut — Kerala, India
B.Sc. in Physics, Minor in Mathematics and Chemistry — 06-2012–05-2015

- Thesis: "Superheated drop detectors and PICO dark matter search experiment"
- Core Course (Physics) CGPA: 3.88/4.00
  Overall CGPA: 3.77/4.00

Central Board of Secondary Education — India
Senior School — 06-2010–03-2012

- Subjects: Physics, Chemistry, Mathematics, Computer Science (C++), English
- Science + CS : 95.00% Overall Percentage: 91.8%

Central Board of Secondary Education — India
High School — –03-2010

- Subjects: Science, Mathematics, Social Science, Sanskrit, English
- CGPA: 10.0/10.0

Experience

Indian Institute of Space Science and Technology — Trivandrum, India
Junior Research Fellow — 01-2018–06-2018

- Radio afterglows of gamma ray bursts
- Analysis of GMRT observations of the afterglow and host-galaxy properties of GRB171205A

Inter University Centre for Astronomy and Astrophysics — Pune, India
Short term project — 08-2017–11-2017

- Gravitational wave data analysis techniques
- χ^2 tests to differentiate between signals and detector glitches in Advanced LIGO data

Saha Institute of Nuclear Physics — Kolkata, India
Undergraduate Associateship Programme — 01-01-2015–30-01-2015

- High energy nuclear and particle physics
- Relativistic Heavy Ion Collisions, Quark Gluon Plasma, HBT Interferometry and the Large Hadron Collider

Saha Institute of Nuclear Physics — Kolkata, India
Undergraduate Associateship Programme — 01-04-2014–21-05-2014

- Astroparticle physics
- Superheated drop detectors and the PICO dark matter search experiment

Publications as first author of Gravitational wave analysis

[1] A. Ashok, P. B. Covas, R. Prix, and M. A. Papa, "Bayesian $\mathcal{F}$-statistic-based parameter estimation of continuous gravitational waves from known pulsars", Jan. 2024. arXiv: 2401.17025 [gr-qc].

[2] A. Ashok, "Targeted searches for continuous gravitational waves", Ph.D. dissertation, Leibniz U., Hannover, 2023.

[3] C. J. Clark *et al.*, "The TRAPUM L-band survey for pulsars in Fermi-LAT gamma-ray sources", *Mon. Not. Roy. Astron. Soc.*, vol. 519, no. 4, pp. 5590–5606, 2023. arXiv: 2212.08528 [astro-ph.HE].

[4] A. Ashok, B. Beheshtipour, M. A. Papa, P. C. C. Freire, B. Steltner, B. Machenschalk, O. Behnke, B. Allen, and R. Prix, "New Searches for Continuous Gravitational Waves from Seven Fast Pulsars", *Astrophys. J.*, vol. 923, no. 1, p. 85, 2021. arXiv: 2107.09727 [astro-ph.HE].

[5] L. Nieder *et al.*, "Discovery of a Gamma-ray Black Widow Pulsar by GPU-accelerated Einstein@Home", *Astrophys. J. Lett.*, vol. 902, no. 2, p. L46, 2020. arXiv: 2009.01513 [astro-ph.HE].

Talks, Conferences And Schools

- **Die Nacht, die Wissen schafft**
  Max Planck Institute for Gravitational Physics, Hannover, Germany — November 2023
  Popular Science Talk
- **Multi-Messenger Continuous Gravitational Waves Workshop**
  Nikhef, Amsterdam — July 2023
  Contributed Talk
- **International Pulsar Timing Array (IPTA) Meeting**
  CSIRO and OzGrav, Australia,
  Student Workshop and Science Meeting — June 2023
  Attendee, Sparkler Talk

- 16^{th} **Bonn Neutron Star Workshop**
  Max Planck Institute for Radioastronomy, Germany — April 2023
  Contributed Talk
- **Gravitational Wave Physics and Astronomy Workshop (GWPAW)**
  OzGrav, Melbourne, Australia — December 2022
  Poster
- **Gravitational Wave Physics and Astronomy Workshop (GWPAW)**
  Hannover, Germany — December 2021
  Poster
- **Annual Meeting of German Astronomical Society**
  online — September 2021
  Contributed Talk
- **International Max Planck Research School on Gravitational Wave Astronomy (IMPRS)**
  Lecture Weeks, Scientific Training Activities — 2018-2022
  PhD Student Participant
- **International School on Gravity from Earth to Space**
  University of Urbino — May 2019
  Student Participant

Additional Responsibilities

- **A set of two lectures on concepts at the core of data analysis for Continuous Gravitational Waves**,
  Max Planck Institute for Gravitational Physics, Hannover — Summer 2023
  Entrusted with initiating collaborative meetings between
  'Continuous Gravitational Waves' and 'Pulsars' groups by the leaders of the two groups.
- **Master student seminar supervision** at Gottfried Wilhelm Leibniz Universität, Hannover — Winter 2019
  Neutron Stars (Gravitational physics seminar)
- **Master course tutorial assistant** at Gottfried Wilhelm Leibniz Universität, Hannover — Winter 2019
  General Theory of Relativity (Gravitational physics)
- **Master student seminar supervision** at Gottfried Wilhelm Leibniz Universität, Hannover — Summer 2019
  Multimessenger astronomy (Gravitational physics seminar)

Languages

- **English: Excellent** IELTS certified:8.5
- **German: Basic** A1 certified : 100/100
- **Malayalam:** Native

References

1. **Prof. Dr. Maria Alessandra Papa**
   Leader of the Max Planck Permanent Independent Research Group Continuous Gravitational Waves, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Hannover
   maria.alessandra.papa@aei.mpg.de
2. **Dr. Reinhard Prix**
   Senior Scientist, Continuous Gravitational Waves, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Hannover
   reinhard.prix@aei.mpg.de

3. **Dr. Colin Clark**
Research Group Leader, Pulsars, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Hannover
colin.clark@aei.mpg.de

4. **Prof. Dr. Bruce Allen**
Director, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Hannover
bruce.allen@aei.mpg.de