

Aditya Vijaykumar

aditya@utoronto.ca • Canadian Institute for Theoretical Astrophysics (CITA) • [Website](#) • [NASA ADS](#)

RESEARCH INTERESTS Gravitational Wave Astronomy and Astrophysics, Tests of General Relativity and Cosmology, Scientific Computing

EMPLOYMENT **CITA Postdoctoral Fellow** Sep 2023 - *Present*
Canadian Institute for Theoretical Astrophysics (CITA), Toronto
Graduate Student Aug 2018 - Aug 2023
International Centre for Theoretical Sciences (ICTS-TIFR), Bengaluru
Fulbright-Nehru Doctoral Research Fellow Aug 2022 - Mar 2023
Department of Physics, The University of Chicago

EDUCATION **ICTS-TIFR**, PhD in Physics 2018 - 2023
Mentor: Prof. Ajith Parameswaran
Birla Institute of Technology and Science (BITS), Pilani 2013 - 2018
M.Sc. (Hons.) Physics and B.E. (Hons.) Mechanical Engineering

AWARDS

1. **Justice Oak Award for Outstanding thesis in Astronomy 2024**, Astronomical Society of India (ASI)
2. **V. V. Narlikar Best Thesis Award 2024**, Indian Association for General Relativity and Gravitation (IAGRG)
3. **Fulbright-Nehru Doctoral Research Fellowship 2022**, USA Department of State, and Government of India
4. **Graduate Fellowship 2018-2023**, ICTS-TIFR
5. **S.N. Bhatt Memorial Excellence Fellowship 2018**, ICTS-TIFR
6. **Summer Research Fellowship 2016**, Indian Academy of Sciences
7. **INSPIRE-DST Scholarship for Higher Education 2013-2018**, Government of India

PUBLICATION [NASA-ADS Link](#)

LIBRARY

SEMINARS AND TALKS

- *Probing host environments of gravitational-wave sources* at **CITA**, January 2024 (Invited talk)
- *Accelerating binaries and their gravitational-wave signatures* at **TASTY, Department of Astronomy and Astrophysics, University of Toronto**, January 2024 (Invited talk)
- *Accelerating gravitational wave sources* at **Joint CITA-PI Gravitational waves meeting**, October 2023 (Contributed talk)
- *Fast Likelihood Evaluation with Relative Binning* at **IUCAA, Pune**, July 2023 (Invited seminar)
- *Testing General Relativity with Gravitational Waves: Opportunities and Challenges* at **IIT-Gandhinagar**, June 2023 (Invited seminar)
- *Fast Likelihood Evaluation with Relative Binning* at **Seoul National University**, October 2022 (Invited online seminar)
- *Standard Sirens and Large Scale Structure* at **The Quest for Precision Gravitational-wave Cosmology, The University of Chicago**, September 2022 (Invited Talk)

- *Gravitational-wave probes of astrophysics and cosmology: Large Scale Clustering and Lensing* at **IGC, Pennsylvania State University**, August 2022 (Invited Seminar)
- *Constraints on the time variation of the gravitational constant using gravitational-wave observations* at **Second Chennai Symposium on Gravitation and Cosmology**, February 2022 (Invited online Seminar)
- *Probing Large Scale Structure using Binary Black Hole Observations* at **Instituut-Lorentz for Theoretical Physics, Leiden University**, June 2020 (Invited online seminar)
- *Constraints on Black Hole Mimickers using GWTC-1* at **ICTS In-house Symposium**, February 2020 (Contributed Poster)
- *Probing Large Scale Structure using Binary Black Hole Observations* at **ICTS In-house Symposium**, ICTS, Bengaluru, India, February 2020 (Contributed Talk)
- *Probing Large Scale Structure using Binary Black Hole Observations* at **International Conference on Gravitation & Cosmology**, IISER, Mohali, India, December, 2019 (Contributed Talk)
- *Probing Large Scale Structure using Binary Black Hole Observations* at **The Inter-University Centre for Astronomy and Astrophysics (IUCAA)**, Pune, India, September 2019 (Invited Talk)
- *Probing Large Scale Structure using Binary Black Hole Observations* at **Max Planck Institute for Gravitational Physics**, Hannover, Germany, June 2019 (Invited Talk)
- *Probing Large Scale Structure using Binary Black Hole Observations* at **GR22 and Amaldi13**, Valencia, Spain, July 2019 (Contributed Talk)
- *Gravitational Lensing from Orbiting Binary* at the **Paper Presentation competition of APOGEE 2017**, BITS Pilani, India (*Contributed Talk, First runner-up*)

TEACHING

- Instructor and organizer, **LIGO-Virgo Collaboration Gravitational-Wave Open Data Workshop #5 and #6** at ICTS.
- Tutor for the **Numerical Relativity** graduate course, ICTS, Jan-April 2022.
- Co-organizer and tutor, **ICTS Workshop on Parameter Estimation with bilby**, ICTS, Bengaluru, India, August 2020 (Online)
- Tutor, **Light and Beyond—Summer Course for Undergraduate Students** by Prof. Rajaram Nityananda, June 2020 (Online)
- Tutor, **LIGO-Virgo Collaboration Gravitational-Wave Open Data Workshop #3**, May 2020 (Online)
- Tutor for the following mini-courses, **ICTS Summer Schools on Gravitational Wave Astronomy**, ICTS, Bengaluru, India:
 1. *Compact binary evolution, rates and population modelling*, June 2022.
 2. *Astrophysical Stochastic GW Foreground*, July 2021.
 3. *Numerical Hydrodynamics*, May 2020.
 4. *Advanced General Relativity*, July 2019.

MENTORSHIP

- | | |
|---|---------------------|
| • Kaustubh Gupta (IISER, Pune) | May 2022 - Present |
| • Adhrit Ravichandran (IIT Roorkee → UMass Dartmouth) | Sep 2021 - Aug 2022 |
| • Kruthi Krishna (IISc → Radboud University) | Sep 2020 - Aug 2021 |
| • Harsh Narola (IISER, Tirupati → Utrecht University) | Sep 2020 - Aug 2021 |

OTHER CONFERENCES AND MEETINGS	<ul style="list-style-type: none"> Semester Participant, Advances in Computational Relativity, ICERM, Brown University, USA. September 2020 - December 2020 (Online) Participant, Discussion Meeting - Astrophysics of Supermassive Black Holes, ICTS, Bengaluru, India, December 2019 Participant, Discussion Meeting - Future of Gravitational Wave Astronomy, ICTS, Bengaluru, India, August 2019 Participant, ICTS Summer School on Gravitational Wave Astronomy, ICTS, Bengaluru, India, July 2017, July 2018, July 2019, May 2020, July 2021, May 2022. 	
OUTREACH	<ul style="list-style-type: none"> Co-PI of the <i>IndiaBioscience Outreach Grant</i> to communicate science using stage theatre. Panelist at the <i>Bengaluru: The Astronomy City</i>, a Q&A event organized for National Science Day, February 2022. Moderated a discussion with Prof. Smitha Vishveshwara on her collaborative science theatre project <i>Quantum Voyages</i> as a part of Cosmic Zoom Online Exhibition, April 2021 Articles on the ICTS blog: <ol style="list-style-type: none"> A Conversation with ICTS Scientists Studying the Indian Monsoon, November 2019 Summer School on Gravitational Wave Astronomy, November 2019 Talk titled <i>The Whats, Whys and Hows of Gravitational-wave Astronomy</i>, BMS College of Engineering, Bengaluru, November 2019 Talk titled <i>Gravitational Waves - A New Tool for Cosmology!</i> at Vigyan Samagam, Visvesvaraya Industrial and Technological Museum, Bengaluru, India, August 2019 	
TECHNICAL SKILLS	Programming Languages - Python, C, C++, Shell Script Softwares - MATLAB, Mathematica Tools/Frameworks - L ^A T _E X, Git	
REFERENCES	Prof. Parameswaran Ajith International Centre for Theoretical Sciences (ICTS-TIFR), Shivakote, Hesaraghatta-Hobli, Bengaluru, 560089, India. ajith@icts.res.in	Prof. Daniel E. Holz The University of Chicago, Michelson Center for Physics, Chicago, IL 60637, USA. holz@uchicago.edu
	Prof. Maya Fishbach Canadian Institute for Theoretical Astro- physics, 60 St George St, Toronto, ON M5S 3H8, Canada. fishbach@cita.utoronto.ca	Prof. Shasvath J. Kapadia Inter-University Centre for Astronomy and Astrophysics, Post Bag 4, Ganeshkhind, Pune, 411007, India shasvath.kapadia@iucaa.in