

# Aditya Vijaykumar

[aditya@utoronto.ca](mailto: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 **International Centre for Theoretical Sciences (ICTS-TIFR), Bengaluru** 2018 - 2023  
PhD in Physics. *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**, US 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

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|---|---------------------------|
| • Kaustubh Gupta (IISER, Pune)                        | May 2022 - <i>Present</i> |
| • 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"> <li>• Semester Participant, <b>Advances in Computational Relativity</b>, ICERM, Brown University, USA. September 2020 - December 2020 (Online)</li> <li>• Participant, <b>Discussion Meeting - Astrophysics of Supermassive Black Holes</b>, ICTS, Bengaluru, India, December 2019</li> <li>• Participant, <b>Discussion Meeting - Future of Gravitational Wave Astronomy</b>, ICTS, Bengaluru, India, August 2019</li> <li>• Participant, <b>ICTS Summer School on Gravitational Wave Astronomy</b>, ICTS, Bengaluru, India, July 2017, July 2018, July 2019, May 2020, July 2021, May 2022.</li> </ul>	
OUTREACH	<ul style="list-style-type: none"> <li>• Co-PI of the <i>IndiaBioscience Outreach Grant</i> to communicate science using stage theatre.</li> <li>• Panelist at the <i>Bengaluru: The Astronomy City</i>, a Q&amp;A event organized for <b>National Science Day</b>, February 2022.</li> <li>• Moderated a discussion with Prof. Smitha Vishveshwara on her collaborative science theatre project <i>Quantum Voyages</i> as a part of <b>Cosmic Zoom Online Exhibition</b>, April 2021</li> <li>• Articles on the <b>ICTS blog</b>: <ol style="list-style-type: none"> <li>1. <b>A Conversation with ICTS Scientists Studying the Indian Monsoon</b>, November 2019</li> <li>2. <b>Summer School on Gravitational Wave Astronomy</b>, November 2019</li> </ol> </li> <li>• Talk titled <i>The Whats, Whys and Hows of Gravitational-wave Astronomy</i>, <b>BMS College of Engineering, Bengaluru</b>, November 2019</li> <li>• Talk titled <i>Gravitational Waves - A New Tool for Cosmology!</i> at <b>Vigyan Samagam</b>, Visvesvaraya Industrial and Technological Museum, Bengaluru, India, August 2019</li> </ul>	
TECHNICAL SKILLS	<b>Programming Languages</b> - Python, C, C++, Shell Script <b>Softwares</b> - MATLAB, Mathematica <b>Tools/Frameworks</b> - L <sup>A</sup> T <sub>E</sub> X, Git	
REFERENCES	Prof. Parameswaran Ajith International Centre for Theoretical Sciences (ICTS-TIFR), Shivakote, Hesarghatta-Hobli, Bengaluru, 560089, India. <a href="mailto:ajith@icts.res.in">ajith@icts.res.in</a>	Prof. Daniel E. Holz The University of Chicago, Michelson Center for Physics, Chicago, IL 60637, USA. <a href="mailto:holz@uchicago.edu">holz@uchicago.edu</a>
	Prof. Maya Fishbach Canadian Institute for Theoretical Astro- physics, 60 St George St, Toronto, ON M5S 3H8, Canada. <a href="mailto:fishbach@cita.utoronto.ca">fishbach@cita.utoronto.ca</a>	Prof. Shasvath J. Kapadia Inter-University Centre for Astronomy and Astrophysics, Post Bag 4, Ganeshkhind, Pune, 411007, India <a href="mailto:shasvath.kapadia@iucaa.in">shasvath.kapadia@iucaa.in</a>