

Aditya Vijaykumar

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

EDUCATION **International Centre for Theoretical Sciences (ICTS-TIFR), Bengaluru**
Research Scholar and Graduate Student in Physics 2018 - Present

Birla Institute of Technology and Science (BITS), Pilani
M.Sc. (Hons.) Physics and B.E. (Hons.) Mechanical Engineering 2013 - 2018

EMPLOYMENT **Graduate Student**
International Centre for Theoretical Sciences (ICTS-TIFR), Bengaluru
Mentored by *Prof. Parameswaran Ajith* Aug 2018 - Present
Member of the *LIGO Scientific Collaboration and the LIGO-India Scientific Collaboration*

Summer Research Intern
International Centre for Theoretical Sciences (ICTS-TIFR), Bengaluru
Mentored by *Prof. Parameswaran Ajith* May 2018 - July 2018
Topic - *Cosmological Large-scale Structure probes using gravitational-wave observations*

Visiting Student (Masters Thesis)
Centre for High Energy Physics (CHEP), Indian Institute of Science (IISc), Bengaluru, India
Mentored by *Prof. Chethan Krishnan* July 2017 - April 2018
Topic - *Complexity in context of Locality, Entanglement and Quantum Gravity*

Summer Research Intern
The Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India
Mentored by *Prof. Raghunathan Srianand* May 2016 - July 2016
Topic - *Analysis of Quasar Absorption Lines from SDSS Photometric Data*

Summer Research Intern
The National Centre for Radio Astrophysics (NCRA-TIFR), Pune, India
Mentored by *Prof. Yashwant Gupta* May 2015 - July 2015
Topic - *Testing the fast transient detection pipeline of the GMRT*

- PAPERS
5. Abbott et al. (LIGO Scientific and Virgo Collaborations, including **Aditya Vijaykumar**)
Tests of General Relativity with Binary Black Holes from the second LIGO-Virgo Gravitational-Wave Transient Catalog.
[arXiv:2010.14529](#).
 4. Abbott et al. (LIGO Scientific and Virgo Collaborations, including **Aditya Vijaykumar**)
GWTC-2: Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run.
[arXiv:2010.14527](#).
 3. **Aditya Vijaykumar**, M. V. S. Saketh, Sumit Kumar, Parameswaran Ajith, Tirthankar Roy Choudhury
Probing the large scale structure using gravitational wave observations of binary black holes,
Submitted to *Physical Review Letters*, [arXiv:2005.01111](#).
 2. **Aditya Vijaykumar**, Shasvath J. Kapadia, Parameswaran Ajith
Constraints on the time variation of the gravitational constant using gravitational wave observations of binary neutron stars,
Accepted to *Physical Review Letters*, [arXiv:2003.12832](#).
 1. P. Virtanen et al. (including **Aditya Vijaykumar** as *SciPy 1.0 Contributor*)
SciPy 1.0—Fundamental Algorithms for Scientific Computing in Python,
Nat Methods 17, 261–272 (2020), [arXiv:1907.10121](#).

SEMINARS AND INVITED TALKS	<ul style="list-style-type: none"> • <i>Probing Large Scale Structure using Binary Black Hole Observations</i> at Instituut-Lorentz for Theoretical Physics, Leiden University, Leiden, Netherlands, June 2020 (Online) • <i>Probing Large Scale Structure using Binary Black Hole Observations</i> at The Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India, September 2019 • <i>Probing Large Scale Structure using Binary Black Hole Observations</i> at Max Planck Institute for Gravitational Physics, Hannover, Germany, June 2019
CONFERENCES, AND OTHER MEETINGS	<ul style="list-style-type: none"> • Semester Participant, Advances in Computational Relativity, ICERM, Brown University, USA. September 2020 - December 2020 (Online) • Poster titled <i>Constraints on Black Hole Mimickers using GWTC-1</i> at ICTS In-house Symposium, ICTS, Bengaluru, India, February 2020 • Talk titled <i>Probing Large Scale Structure using Binary Black Hole Observations</i> at ICTS In-house Symposium, ICTS, Bengaluru, India, February 2020 • Participant, Discussion Meeting - Astrophysics of Supermassive Black Holes, ICTS, Bengaluru, India, December 2019 • Talk titled <i>Probing Large Scale Structure using Binary Black Hole Observations</i> at International Conference on Gravitation & Cosmology, IISER, Mohali, India, December, 2019 • Participant, Discussion Meeting - Future of Gravitational Wave Astronomy, ICTS, Bengaluru, India, August 2019 • Talk titled <i>Probing Large Scale Structure using Binary Black Hole Observations</i> at GR22 and Amaldi13, Valencia, Spain, July 2019 • Talk titled <i>Gravitational Lensing from Orbiting Binary</i> at the Paper Presentation competition of APOGEE 2017, BITS Pilani, India (<i>First runner-up</i>)
SCHOOLS AND TUTORING	<ul style="list-style-type: none"> • Co-organizer and tutor, ICTS Workshop on Parameter Estimation with bilby, ICTS, Bengaluru, India, August 2020 (Online) • Tutor, LIGO-Virgo Collaboration Gravitational-Wave Open Data Workshop #3, May 2020 (Online) • Participant and Tutor for the <i>Numerical Hydrodynamics</i> mini-course, ICTS Summer School on Gravitational Wave Astronomy, ICTS, Bengaluru, India, May-June 2020 (Online) • Participant and Tutor for the <i>Advanced General Relativity</i> mini-course, ICTS Summer School on Gravitational Wave Astronomy, ICTS, Bengaluru, India, July 2019 • Participant, ICTS Summer School on Gravitational Wave Astronomy, ICTS, Bengaluru, India, July 2018 • Participant, ICTS Summer School on Gravitational Wave Astronomy, ICTS, Bengaluru, India, July 2017
OUTREACH TALKS	<ul style="list-style-type: none"> • <i>The Whats, Whys and Hows of Gravitational-wave Astronomy</i>, BMS College of Engineering, Bengaluru, November 2019 • <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

SCORES AND
AWARDS

- Scored 960/990 on the [Subject GRE in Physics](#), October 2017
- Secured all-India rank 21 in the [Joint Entrance Screening Test \(JEST\)](#), 2018 for admission into Physics PhD programmes in India
- Awarded the [ICTS S.N. Bhatt Memorial Excellence Fellowship](#), 2018
- Selected for the [Summer Research Fellowship](#) of the Indian Academy of Sciences in 2016
- Receptient of the [INSPIRE-DST Scholarship for Higher Education](#) for the period 2013 to 2018

REFERENCES

- Prof. Parameswaran Ajith, ICTS – ajith@icts.res.in
- Dr. Shasvath Kapadia, ICTS – shasvath.kapadia@icts.res.in
- Dr. Sumit Kumar, AEI Hannover – sumit.kumar@aei.mpg.de
- Prof. Bala Iyer, ICTS – bala.iyer@icts.res.in