

# 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*

PUBLICATIONS      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*,  
Submitted to *Physical Review Letters*, [arXiv:2003.12832](#).  
1. P. Virtanen *et al.* (incl. **Aditya Vijaykumar** as *SciPy 1.0 Contributor*)  
*SciPy 1.0—Fundamental Algorithms for Scientific Computing in Python*,  
*Nat Methods* 17, 261272 (2020), [arXiv:1907.10121](#).

CONFERENCES, SCHOOLS AND TALKS      • Invited seminar titled *Probing Large Scale Structure using Binary Black Hole Observations* at **Instituut-Lorentz for Theoretical Physics, Leiden University**, Leiden, Netherlands, June 2020 (Online)  
• Tutor for the *LIGO-Virgo Collaboration Gravitational-Wave Open Data Workshop #3*, May 2020 (Online)  
• Participant and Tutor for the *Numerical Hydrodynamics* mini-course, **ICTS Summer School on Gravitational Wave Astronomy**, ICTS, Bengaluru, India, May-June 2020 (Online)

- Poster titled *Constraints on Black Hole Mimickers using GWTC-1* at **ICTS In-house Symposium**, ICTS, Bengaluru, India, February 2020
- Talk titled *Probing Large Scale Structure using Binary Black Hole Observations* at **ICTS In-house Symposium**, ICTS, Bengaluru, India, February 2020
- Participant, **Discussion Meeting - Astrophysics of Supermassive Black Holes**, ICTS, Bengaluru, India, December 2019
- Invited outreach talk titled *The Whats, Whys and Hows of Gravitational-wave Astronomy*, **BMS College of Engineering, Bengaluru**, November 2019
- Participant, **Discussion Meeting - Future of Gravitational Wave Astronomy**, ICTS, Bengaluru, India, August 2019
- Invited seminar titled *Probing Large Scale Structure using Binary Black Hole Observations* at **The Inter-University Centre for Astronomy and Astrophysics (IUCAA)**, Pune, India, September 2019
- Invited outreach talk titled *Gravitational Waves - A New Tool for Cosmology!* at **Vigyan Samagam**, Visvesvaraya Industrial and Technological Museum, Bengaluru, India, August 2019
- Participant and Tutor for the *Advanced General Relativity* mini-course, **ICTS Summer School on Gravitational Wave Astronomy**, ICTS, Bengaluru, India, July 2019
- Talk titled *Probing Large Scale Structure using Binary Black Hole Observations* at **GR22 and Amaldi13**, Valencia, Spain, July 2019
- Invited talk titled *Probing Large Scale Structure using Binary Black Hole Observations* at **Max Planck Institute for Gravitational Physics**, Hannover, Germany, June 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
- Talk titled *Gravitational Lensing from Orbiting Binary* at the **Paper Presentation competition of APOGEE 2017**, BITS Pilani, India (*First runner-up*)

#### TECHNICAL SKILLS

**Programming Languages** - Python, C, C++, Shell Script  
**Softwares** - MATLAB, Mathematica  
**Tools/Frameworks** - L<sup>A</sup>T<sub>E</sub>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
- Recipient of the **INSPIRE-DST Scholarship for Higher Education** for the period 2013 to 2018

#### REFERENCES

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