Aditya Vijaykumar

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Reserach Interests

Gravitational Wave Astronomy and Astrophysics, Tests of General Relativity and Cosmology

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*

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 and Debugging the Transient Detection Pipeline of GMRT

Projects

- **Aditya Vijaykumar**, MV Saketh, Sumit Kumar, Parameswaran Ajith, Tirthankar Roy Chowdhury.
  Probing the cosmological large-scale structure using gravitational-wave observations
  (manuscript in preparation)

- **Aditya Vijaykumar**, Shasvath Kapadia, Parameswaran Ajith.
  Constraining the time-variation of the Gravitational constant using gravitational-wave observations of binary neutron stars
  (manuscript in preparation)

- **Aditya Vijaykumar**, Nathan Johnson-McDaniel, Rahul Kashyap, Arunava Mukherjee, Parameswaran Ajith.
  Constraints on Black Hole Mimickers from the Gravitational-wave Transient Catalog (GWTC) -1

Conferences, Schools and Talks

- 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

- Talk titled *Probing Large Scale Structure using Binary Black Hole Observations* at **The Inter-University Centre for Astronomy and Astrophysics (IUCAA)**, Pune, India, September 2019
- 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
- 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, Maple
Tools/Frameworks - LaTeX, 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
- Recepient of the INSPIRE-DST Scholarship for Higher Education for the period 2013 to 2018