

Aditya Vijaykumar

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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

High School - **St. Vincent's High School, Pune** (Maharashtra HSC)

2011 - 2013

Secondary School - **Rosary High School, Pune** (Maharashtra SSC)

1999 - 2011

RESEARCH EXPERIENCE

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

Complexity in context of Locality, Entanglement and Quantum Gravity - We aim to extract lessons for quantum gravity by studying the interplay of entanglement and locality in a few physical systems. We reviewed the various conjectures on complexity and related concepts, and attempted calculating complexity for different field theories.

Research Project

Birla Institute of Technology and Science (BITS), Pilani

Mentored by *Prof. J N Bandyopadhyay* and *Prof. Tapomoy G Sarkar*

Aug 2016 - June 2017

Entanglement Production in Coupled Chaotic Systems - A computational study of chaotic properties of a coupled chaotic system. We considered a coupled top, and using some approximation methods to the Hamiltonian, found the chaotic properties within some parameter ranges. A statistical analysis of the properties followed, with results.

Summer Research Intern

The Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India

Mentored by *Prof. Raghunathan Srianand*

May 2016 - July 2016

Analysis of Quasar Absorption Lines from SDSS Photometric Data - Using photometric data of quasars with absorbers in their line of sight taken from the Sloan Digital Sky Survey (SDSS), we used some image processing techniques such as stacking to establish a correspondence between the results already obtained from the spectral data also taken from SDSS. We used some statistical methods to establish this result.

Summer Research Intern

The National Centre for Radio Astrophysics (NCRA-TIFR), Pune, India

Mentored by *Prof. Yashwant Gupta*

May 2015 - July 2015

Testing and Debugging the Transient Detection Pipeline of GMRT - Squashed crucial bugs and tested the transient pipeline using test data from known and reliable transient sources such as pulsars. Also reviewed key concepts of radio astronomy and pulsar astrophysics in the process.

CONFERENCES, SCHOOLS AND TALKS

- 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
- 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 2018

- 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 - L^AT_EX, 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