

RESEARCH INTERESTS

Gravitational Waves | Tests of General Relativity | Black Hole Physics | Modified Theories of Gravity

EDUCATION

Qualification	School/College	Year	Score
PhD	University of Rhode Island, Kingston	2023 - Present	4.0/4.0
B.S. Physics	Indian Institute of Technology, Kanpur	2017 - 2021	9.1/10
XII (CISCE)	The Valley School, KFI, Bengaluru	2014 - 2016	91.2%
X (CBSE)	National Hill View Public School, Bengaluru	2012 - 2014	10/10

RESEARCH EXPERIENCE

Visiting Project Student, International Centre for Theoretical Sciences, Bengaluru May 2022 - August 2023

Guide: Prof. Prayush Kumar, Astrophysical Relativity Group

- Worked towards verifying the Black Hole Area Law using Gravitational Wave Data for multiple events

Project Student, Indian Institute of Technology, Bombay May 2022 - August 2023

Guide: Prof. S. Shankaranarayanan, Department of Physics

- Studied the Electromagnetic memory effect in a non-minimally coupled Modified Theory of Electrodynamics.
- Worked on constraining the parameters of dynamical Chern-Simons Gravity using Ringdown Gravitational Wave Signals and the design sensitivity of the Cosmic Explorer and Einstein Telescope Projects.

Research Intern, Albert Einstein Institute, Hannover, Germany June 2021 - January 2022

Guide: Prof. Badri Krishnan, Observational Relativity and Cosmology

- Worked on dynamical horizons, its links to the Event Horizon of a Black Hole and the variation of the area of a dynamical horizon during a Binary Merger, specifically in the case of the Vaidya Spacetime

Summer Intern, Raman Research Institute, Bengaluru, India May 2018 - June 2018

Guide: Prof. Gautam Soni, Department of Soft Condensed Matter

- Studied the Dielectric properties of Red Blood Cells and characterised its birefringence by studying the effect of an AC Electric field on both healthy and created RBCs.

SKILLS

- **Programming Languages:** Python (*Libraries: NumPy, Matplotlib, Scipy, Seaborn, Pandas, h5Py, GWPy, PyCBC, Bilby*), C, C++
- **Software and tools:** Mathematica, Origin, LaTeX, Cadabra
- **Languages:** English(Bilingual), Tamil(Native), Kannada(Bilingual), Hindi(Professional), German(Elementary)

ACHIEVEMENTS

- Recipient of the **Inspire Scholarship for Higher Education (SHE)** awarded by the Department of Science and Technology, Government of India.
- All India Rank **5909**, JEE Advanced, 2017

COURSE PROJECTS

- Guide: Prof. Gautam Sengupta, Department of Physics, IIT Kanpur** February 2021 - April 2021
- Study of the de Sitter Spacetime and its properties, including its geodesics in various coordinate systems and the properties of the de Sitter - Schwarzschild metric
- Guide: Prof. Debashish Chowdhury, Department of Physics, IIT Kanpur** September 2020 - November 2020
- Comparative study on Stochastic Path Integrals and Quantum Path Integrals, in the case of a free particle. Looked into whether Quantum Mechanics could be studied as a Markov Process
- Guide: Prof. Krishnacharya, Department of Physics, IIT Kanpur** October 2019 - November 2019
- Constructed an acoustic analogue of a Pulsar Timing Array and used it to emulate the detection of a gravitational wave.
- Guide: Prof. Saikat Ghosh, Department of Physics, IIT Kanpur** October 2018 - November 2018
- Studied the geometric phases produced by a set of polarisation transformations in a Sagnac Interferometer, and verified the Pancharatnam Effect for this setup.

COURSEWORK

- **Compulsory Physics:** Classical Mechanics, Classical Electrodynamics, Optics, Thermodynamics, Special Relativity, Quantum Mechanics, Equilibrium Statistical Mechanics, Computational Physics
- **Physics Electives:** Fluid Mechanics, General Relativity, Cosmology, High Energy Astrophysics, Non - Equilibrium Statistical Mechanics, Classical Information Theory, Quantum Dynamics, Information and Computation, Relativistic Electrodynamics, Advanced General Relativity
- **Mathematics:** Single and Multivariate Calculus, Linear Algebra, Ordinary Differential Equations, Analysis, Set Theory and Logic, Complex Analysis, Group Theory, Partial Differential Equations
- Attended the **ICTS Summer School on Gravitational Wave Astronomy**, Held at ICTS-TIFR, Bengaluru, from May 30th to June 10th, 2022

POSITIONS

- **Student Guide, Counselling Service, IITK:** Helped conduct the Freshers Orientation Program.
- **Academic Mentor, Counselling Service, IITK:** Mentored students and taught remedial classes.
- **Student Nominee, Department Undergraduate Committee, IITK:** Represented undergraduate students at meetings of the Department Undergraduate Committee (DUGC) in matters of course feedback, syllabus and course template formulation, helped students in their appeals against termination of their academic programs

EXTRACURRICULARS

- Passionate for music and has been trained vocally in both the South Indian and North Indian Styles of Classical Music for over 17 years, clearing examinations for both styles. Plays the violin in the Indian Classical Style and has been learning for 3 years.

REFERENCES

Available on request