Rishik Perugu

UG Fourth Year
Indian Institute of Science
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Education

Indian Institute of Science — Bangalore
B.S.(Research) in Physics, CGPA: 9.1/10 — 2019–Current

Sri Chaitanya Narayana Jr College — Hyderabad
Intermediate/+2, Marks: 980/1000 — 2017–2019

Shine High School — Warangal
Matriculation, CGPA: 9.8/10 — 2016-2017

Scholastic Achievements

- Recipient of the prestigious **KVPY Fellowship and Scholarship** by DST, Govt. of India — 2019–Current
- Secured **ALL INDIA RANK 135** in **JEE ADVANCED** examination among 0.16 million candidates — 2019
- Secured **ALL INDIA RANK 147** in **JEE Mains** examination among 1.2 million candidates — 2019
- Bagged **37th rank** in **TS EAMCET** examination among 0.14 million candidates across TS and AP — 2019
- Bagged **62th rank** in **AP EAMCET** examination among 0.18 million candidates across TS and AP — 2019
- Achieved **AIR 8 (NISER)** in **NEST** examination among 0.04 million candidates — 2019
- Achieved **AIR 12 (UM-DAE CEBS)** in **NEST** examination among 0.04 million candidates — 2019

Projects

Supersolidity in extended bose hubbard model — May 2022 - Current
Guide: *Prof. Thomas Schmidt and Dr. Andreas Haller, DPhyMS, University of Luxembourg* — (Bachelor's thesis)

- The goal of this thesis project is to understand supersolidity in extended Bose Hubbard model and rigorously derive it.
- Approaching the problem both numerically and analytically.

Molecular Aggregate Photophysics — June 2021 - May 2022
Guide: *Dr. Jayashree Nagesh, IISc Bangalore*

- Studied Frenkel Exciton states in molecular aggregates from literature and implemented code to simulate the properties of these states.
- Currently exploring Charge Transfer states in molecular aggregates.

Plasma Physics — Feb 2021 - Sept 2021
Guide: *Prof. Animesh Kuley, IISc Bangalore*

- Studied basics of plasma physics and trajectories of charged particles in electromagnetic fields.
- Studied and implemented numerical methods to solve for trajectories of charged particle in electromagnetic fields such as Euler method, RK methods, Borish Push method.

Positions of Responsibility

Decoherence Coordinator Pravega '21

Among a group of 45 people of Science and Tech Pravega '21 team July 2020 - August 2021

- **Spooky Quizzes**
  Organized two rounds of quizzes spanned over 6 weeks where about 200+ high school and UG students participated in these physics based quizzes
- **Coherence Lecture Series**
  Organized 10 lectures where eminent physicists from all over the world talked about their research work and/or their areas of expertise
- **Decoherence 2021**
  Organized the physics flagship event of Pravega for the year 2021. There were about 700 registrations across India, few from universities abroad. I was involved with the organization and question making for the competition.

Techanical Skills

- **Programming:** C, Python, MATLAB, Octave, Julia
- **Packages and Tools:** LaTeX, Matplotlib, NumPy

Key Courses Undertaken

- **Maths:** Real analysis, Linear Algebra, Multivariable Calculus, Probability and Statistics
- **Physics:** Mechanics, Electricity and Magnetism, Thermal and Modern Physics, Intermediate Mechanics, Oscillations and Waves, Intermediate Electromagnetism and the Quantum Physics of Radiation, Intermediate Thermal Physics and the Physics of Materials, Introduction to Quantum Measurement and Control, Classical Mechanics, Quantum Mechanics 1, Mathematical Methods of Physics, Nuclear and Particle Physics, Quantum Mechanics 2, Statistical Mechanics, General Relativity, Condensed Matter Physics 1, Introduction to Materials for Quantum Technologies
- **Misc:** Computers in Chemistry

Extracurricular Activities

- Volunteered for an event called Exhibition in Pravega '20, Annual Cultural, Science and Tech fest of Indian Institute of Science, Bangalore
- Demonstrated Chladni plates experiment during Open Day 2020, Indian Institute of Science, Bangalore. Approximate footfall was 50k
- Participated in many Annual Science Fairs during my schooling