

MOHAMMED SAMEED HUSSAIN

+91 9866709718 ep21btech11019@iith.ac.in www.linkedin.com/in/sameedhussain

Education

Indian Institute of Technology Hyderabad, Location

Nov 2021 - May 2025

Bachelor of Technology, Engineering Physics: **8.91/10**

Sangareddy, India

MS Junior College

Jun 2018 - May 2020

Senior High School, Percentage: **94.5%**

Hyderabad, India

Nasr Boys School

Jun 2010 - Apr 2018

High School, Percentage: **93.2%**

Hyderabad, India

Projects

Neutrino Oscillations and DUNE

May 2023 - Present

Mentor: Prof. Narendra Sahu (IIT Hyderabad)

- Studied two and three flavour Neutrino Oscillations with Matter Effects.
- Studied Dirac Equation, Dirac Mass, Majorana Mass Mechanism and the Algebra of Gamma Matrices.
- Studied the Conceptual Design Reports of **DUNE** (*Deep Underground Neutrino Experiment*) and **LBNF** (*Long-Baseline Neutrino Facility*), and the working and design of detectors.
- Will be Simulating the response of Detectors for Neutrinos as a candidate for Light Dark Matter.

JWST Pipeline

Jun 2023 - Present

Mentor: Prof. Mayukh Pahari (IIT Hyderabad)

- Studied the working and implementation of JWST Pipeline for Time Series Observation (TSO).
- Produced the desired Data Products by running JWST Pipeline on simulated data.
- Will be simulating TSO data of JWST using MIRAGE.

FFT Implementation and Analysis of Celestial Data

Dec 2022 - Mar 2023

Mentor: Prof. Mayukh Pahari (IIT Hyderabad)

- Studied and Implemented **FFT algorithm** using proper sampling techniques for the given Pulsar data.
- Utilised Data Visualisation techniques to create various plots, and finding the Time Period of Pulsars.

Technical Skills

Programming Languages: C, C++, Python, MATLAB

Libraries: Astropy, Numpy, Matplotlib, SciPy, Pandas

Software & Tools: Mathematica, Latex, Jupyter Notebook

Relevant Coursework

Physics

Special Relativity, Classical Mechanics, Quantum Mechanics-I*, Optics and Photonics, Electrodynamics*, Fluid Dynamics, Thermodynamics, Statistical Mechanics*, Advanced Mathematical Physics, Electricity and Magnetism, Non-Linear Dynamics, Electronic Device Physics, Physics Lab

Mathematics

Ordinary Differential Equations, Transform Techniques, Probability, Introduction to Number Theory, Calculus I and II, Elementary Linear Algebra, Introduction to Statistics

Computational

Computational Physics (in MATLAB), Data Structures and Applications, Artificial Intelligence, Introduction to Programming(in C)

Other

Signals and Systems, Digital Circuits, Analog Electronics, Electronics Lab (EP Lab-2), Basic Electrical Engineering, Basic Electric Circuits

* *currently doing*

Achievements

Joint Entrance Examination (JEE) Advanced, 2021 - Achieved an All India Rank of **1897** among more than **140,000** candidates

Joint Entrance Examination (JEE) Mains, 2021 - Top **0.3 percentile** among more than **0.93 million** candidates

Positions of Responsibility

Core Member, Cepheid

June 2022 - May 2023

The Astronomy and Astrophysics Club, IIT Hyderabad

- Conducted a hands-on workshop on Planetary Image Processing from raw data, using various image manipulation techniques.
- Mentored fellow core members, equipping them with comprehensive knowledge and proficiency in operating a diverse range of telescopes.