Soumadip R. Bhowmick

Fifth Year Undergraduate Student

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EDUCATION

Integrated BS-MS Oct 2022 – May 2027
Indian Institute of Science Education and Research, Mohali CGPA : 8.75
Physics Major with a minor in **Astronomy**

PROJECTS & EXPERIENCE

Characterization and Testing of a HgCdTe (HAWAII) Infrared Detector for Astronomy Jun 2026 – Present
Pune, India
Prof. A. N. Ramaprakash, Inter-University Centre for Astronomy & Astrophysics, Pune

- Performing laboratory characterization and validation of HAWAII HgCdTe infrared detectors, measuring parameters such as gain, read noise, dark current, persistence and non-linearity under cryogenic conditions.
- This project involves optimizing and testing of ISDEC-3, an in-house developed backend electronics card used for controlling the HAWAII-xRGs in instruments

Developing the Telescope Control System for the IUCAA Girawali Observatory Mar 2025 – Present
Pune, India
Prof. A. N. Ramaprakash, Inter-University Centre for Astronomy & Astrophysics, Pune

- Developed a modern updated telescope control system in the efforts of revamping the observatory's older computing systems.
- The web-based software lets observers assume remote control for observations, calculate the astrometric coordinates and slew/track the telescope
- Successful communication was setup with the autoguider control system, currently working on integration of the real time axis controllers

Developing Neural Networks for Gravitational Wave detection Apr 2024 – Jul 2024
Dr. Anupreeta More, Inter-University Centre for Astronomy & Astrophysics, Pune

- Built Convolutional Neural Networks to classify eccentric and non-eccentric binary black hole mergers
- Simulated gravitational wave signals using PyCBC and GWPy, which were used as training data for deep learning models
- The CNN proved to be a more efficient method of detection rather than matched-filtering algorithms

Studying the relativistic Doppler shift in the Cosmic Microwave Background May 2023 – Aug 2023
Prof. Jasjeet Singh Bagla, Indian Institute of Science Education and Research, Mohali

- Worked with the IR data from the COBE-FIRAS instrument to find anisotropies in the CMB radiation
- Analysed raw data of CMBR using parameter fitting algorithms (Scipy/Astropy)
- Calculated motion of the solar system with respect to the CMB using relativistic Doppler effect
- Created a Jupyter notebook for future laboratory students studying cosmology and relativistic effects

WORKSHOPS/CONFERENCES

ASI Symposium 2026: Communicating Astronomy in India Jan 2026

Square Kilometre Array International Consortium Meeting 2026 Jan 2026

GIAN Workshop on NV centers in Diamond & Quantum Measurement Oct 2025

Challenges and Innovations in Computational Astrophysics VI Sep 2025

Sagan Exoplanet Summer Hybrid Workshop Jun 2023

AWARDS

Merit Certificate for Best Academic Performance Aug 2026
IISER Mohali

Institute Merit-cum-Means Scholarship Jul 2023
IISER Mohali

SKILLS

Coding: Python, Jupyter Notebook, C/C++, Javascript, PostgreSQL, MATLAB, Mathematica

Astronomy Specific:: Telescope Operation, Astropy, SAODS9

Working Environments: Linux, Git, Latex, Typst, Markdown

CAD & Simulation: kiCAD, Zeemax, Solidworks

Languages: English, Hindi, Bengali

RELEVANT COURSES

Astrophysics 1: Astrophysical Processes & Stars

Astrophysical Techniques

Advanced Optics & Spectroscopy Lab

Advanced Electronics & Instruments Lab

Solid State Physics

Classical Electrodynamics

Thermodynamics & Statistical Physics

Astrophysics 2: Galaxies and Cosmology

Advanced Experiments in Physics Lab: Lasers & Optics

Non Linear Dynamics & Chaos

Advanced Quantum Mechanics

Nuclear Physics Lab

Spectroscopic Methods Lab

TEACHING EXPERIENCE

Teaching Assistant (OCSC 2025)
Taught observational astronomy and telescope handling to students qualified for the Orientation cum Selection Camp for the Indian team in International Olympiad of Astronomy & Astrophysics (2025)

EXTRA-CURRICULARS

Convener of the Astronomy Club, IISERM Oct 2023 – Oct 2024

- Conducted numerous talks and seminars by professors from universities around the country/abroad.
- Organised night sky observation sessions in the campus, taught students the working of astronomical telescopes.
- Hosted astronomy-themed quizzes and treasure hunts, leading teams of volunteers to organize events in the campus.
- Held outreach sessions to promote astronomy to more than 2000 students in government schools of Chandigarh.

Robotics & Intrumentation Club, IISERM Feb 2024 – present

- Part of the university team participating in Technex, the annual Technology fest of IIT-BHU (Varanasi). Events: Amateur Water Rockets, Solid boost rockets, RC aircrafts, Pixelate (pattern finding robots)
- Participated in hands-on robotics workshops, talks and built various electronics projects.

National Service Scheme Dec 2023 – Oct 2024

- Volunteered to set up and educate children in a rural school in Chilla, Punjab

OTHER INTERESTS

Amateur astronomy, Tinkering with computer hardware & software, Fine art, Literature, Cinema, Birdwatching, Cooking