

A K VAIBHAVA

Physics Major at IISER Thiruvananthapuram

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Summary

Undergraduate physics student with a focused interest in astrophysics, particularly the evolution and life cycles of stars. Experienced in theoretical work and data analysis, and motivated by a deep curiosity about the physical mechanisms governing stellar and galactic systems. Dedicated to developing strong research skills and contributing to the astrophysics community.

Education

IISER Thiruvananthapuram, BSMS Dual Degree in Applied Physics Aug 2023– July 2028

- **Coursework:** Thermal and Statistical Physics, Numeric Computing , Scientific Computing , Experiments in Optics, Electricity and Magnetism , Numeric Computing , Logic and Discrete Mathematics , Machine Learning , Data Analysis and Visualization , Quantum Mechanics , Electronics , Advanced Physics Lab

Experience

Hostel Secretary, Students Affair Council - IISER Thiruvananthapuram Aug 2024 – Jul 2025

- **Hostel Administration & Community Engagement:**Coordinated hostel affairs and maintenance requests, liaised between residents and admin, and organized feedback initiatives and events to enhance student life.

CeNSE Summer School, Semiconductor Technology and Microfabrication June 2024

- **Virtual Micro/Nano-Fabrication:** Completed online photolithography and CVD/ALD modules with remote lab demos, optimizing exposure doses and deposition rates for sub-micron patterning.
- **Remote Device Metrology:** Analyzed I–V/C–V and ellipsometry datasets via cloud-based platforms, correlating thin-film uniformity and interface traps with MOS device performance.

OnLine Summer School,Remote Sensing and GIS for Environmental Studies Jul 2021

- **Virtual Remote Sensing & Image Analysis:** Completed online modules in satellite imagery acquisition, preprocessing, and classification, optimizing NDVI and land-cover mapping algorithms.
- **Cloud-Based GIS Spatial Analysis:** Performed spatial data integration and geostatistical modeling via ArcGIS Online/QGIS Cloud, correlating topographic, climatic, and land-use layers for environmental assessment.

Core Committee Member, Coding Club - IISER Thiruvananthapuram Jan 2024 – Present

- Conducted coding events, curated learning resources, and mentored juniors in programming.
- Played a key role in organizing workshops and competitions to promote coding culture.

Active Member, Parsec Physics Club – IISER Thiruvananthapuram Aug 2023 – Present

- Participated in physics discussions, quizzes, and outreach events to promote scientific thinking.
- Helped organize talks and student-led initiatives to build an active physics community.

Projects

From Stardust to Stars, Astrophysics Coursework – IISER Thiruvananthapuram Nov 2024

- Authored a comprehensive essay on stellar evolution covering formation in nebulae, main-sequence dynamics, and diverse stellar endpoints including white dwarfs, neutron stars, and black holes.
- Analyzed the Hertzsprung–Russell diagram and mass-luminosity relationships, incorporating observational evidence from NASA, Hubble, and Event Horizon Telescope to explain stellar nucleosynthesis and cosmic material recycling.

Web Development for Beginners, Coding Club – IISER Thiruvananthapuram Nov 2023

- Conducted an introductory web development program that trained 20+ students in HTML, CSS, and JavaScript fundamentals.

- Participants were later incorporated into the Coding, Creativity, and Innovation Team (CCIT) to contribute to STC web development initiatives.

STC Web Dev, Science & Technology Council – IISER Thiruvananthapuram 2024

- Collaborated in designing and developing the official STC website with backend integration to streamline event updates, council activities, and student outreach.
- Ensured responsive design and robust architecture to support long-term usability within the institute's technical ecosystem.

Static Model Designer, Anvesha Science Fest – IISER Thiruvananthapuram Sep 2023

- Built static models and designed interactive displays to communicate physics concepts for exhibitions and public engagement.

Science Communication Project, Humanities Course – IISER Thiruvananthapuram 2023–2024

- Led a semester-long team project on effective science communication, developing public speaking, leadership, and audience-tailoring skills.

Technologies

Languages: C++, C, SQL, Python, R-Lab