

Laksh Gupta

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Recent Bachelor of Science (Honors) from [Ahmedabad University](#), India, with a major in **Physics** and a minor in **Mathematics**. I studied White Dwarfs using data from the Hubble Space Telescope for my undergraduate thesis supervised by [Professor Samyaday Choudhury](#) (Ahmedabad University, India) and in collaboration with [Dr. Annalisa Calamida](#) (Space Telescope Science Institute, USA). Currently, I am a research intern at the Astronomy & Astrophysics group at Ahmedabad University under Professor Samyaday Choudhury

EDUCATION

Bachelors of Science (Honours) in Physics , <i>Ahmedabad University</i> GPA - 3.32/4 <i>Relevant Coursework:</i> Quantum Mechanics, Atomic & Nuclear Physics, Condensed Matter Physics, Plasma Physics, Nonlinear Dynamics, Computational Math, Electronics, Quantum Computing, Complex Analysis, Mathematical Statistics, Linear Algebra, Differential Equations, Multivariate Calculus, Advanced Writing	August 2020 - June 2024
12th Grade , <i>La Martiniere College, Lucknow</i> Score - 81.2%	March 2020
10th Grade , <i>La Martiniere College, Lucknow</i> Score - 84.8%	March 2018

SKILLS

Tools	\LaTeX , Excel, Tracker, TOPCAT
Astronomy	BaSTI Models (White Dwarf Cooling Models, Isochrones, Evolutionary Tracks), Optical and Near-IR Hubble Data Analysis, Color-Magnitude Diagram Analysis, Reddening Estimation
Programming Languages	<ul style="list-style-type: none">Python (NumPy, SciPy, Pandas, AstroPy, Shapely)MATLABJavaR
Communication	Fluent in English and Hindi

RESEARCH EXPERIENCE

Research Intern <i>Supervisor: Professor Samyaday Choudhury</i>	May 2024 - Present <i>Ahmedabad University</i>
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PROJECTS

Undergraduate Thesis: Study of white dwarfs in the globular cluster NGC2808 <i>Supervisor: Professor Samyaday Choudhury</i>	July 2023 - June 2024 <i>Ahmedabad University</i>
<ul style="list-style-type: none">Performed star counts of different evolutionary phases using photometric data of NGC2808 from the HUGS survey.Overplotted various BaSTI models (White Dwarf Cooling Models, Isochrones and Evolutionary Tracks) on NUV-optical Color-Magnitude Diagrams to calculate crossing times across different evolutionary phases.	

- Created a Python pipeline to systematically analyse stellar populations (White Dwarf Stars, Red Giant Branch Stars, Main Sequence Turnoff Stars) for NGC2808 which is potentially applicable to other globular clusters.
- Our results indicate that the White Dwarf Sequence in NGC2808 has no bimodality up to 24 magnitude.

Summer Reading Project: Stellar Structure & Evolution

April 2023 - July 2023

Supervisor: *Professor Samyaday Choudhury*

Ahmedabad University

- Acquired foundations in stellar structure and evolution - particularly in low-mass stars, radiative transfer and nucleosynthesis in stellar interiors, globular clusters and open clusters, compact objects like white dwarfs, stellar collisions and binary stars.

Constructing a low-cost Nuclear Magnetic Resonance Apparatus

May 2023 - October 2023

Supervisor: *Professor Navinder Singh*

Physical Research Laboratory, Ahmedabad

- Gained hands-on knowledge of Nuclear Magnetic Resonance (NMR) apparatus.
- Built an NMR apparatus using minimum circuitry and instruments for academic teaching purposes.

Profiling a Helium-Neon LASER beam

Optics Laboratory Project

- Designed the experimental apparatus to profile the He-Ne LASER beam profiling, ensuring precise alignment and calibration of optical components.
- Conducted a detailed error analysis of the experiment.

Intrinsic Magnetic Field inside Neodymium Magnets

Electromagnetism Laboratory Project

- Calculated the angular velocity (ω) of the neodymium magnets from the nail-motor experiment apparatus using Tracker software.
- Using ω measurements, the intrinsic magnetic field of the magnets was determined and a thorough error analysis was conducted.

Newton's Cradle

Classical Mechanics Laboratory Project

- Calculated the translational velocities of the bobs from the Newton's Cradle setup using Tracker software.
- After performing error analysis, translational velocity measurements were utilized to understand conservation of energy and momentum.

OTHER PROJECTS

Need Analysis for Emotional Health and Well-being of students

May 2022 - September 2023

Supervisor: *Professor Shilpa Pandit*

Research Project

- Designed a comprehensive survey to collect data on various aspects of students' mental health, ensuring inclusively and anonymity.
- Cleaned the data to remove inconsistencies and converted qualitative responses into numerical values using Python. Identified the most impactful factors contributing to students' emotional well-being.

LEADERSHIP AND VOLUNTEERING ACTIVITIES

- Founded *Ramanujan Math Club* promoting student problem-solving and mathematics (August 2023 - May 2024)
- Represented Physics at the *Career Development Center* (May 2023 - May 2024)
- Volunteered at *Prabhat Foundation* during the COVID-19 pandemic (May 2021 - July 2021)
- Organized a *Math Fest* at the university (November 2023)
- *Peer Tutor* for Atomic & Nuclear Physics (January 2024 - May 2024) and Advanced Writing (August 2021 - December 2021)
- *Student Mitr* - Mentored 15 incoming students to acquaint them with the university's culture (August 2021 - April 2022)
- *Junior Manager* Outgoing Social Sector - *AIESEC* in Ahmedabad (August 2021 - October 2021)