

# Laksh Gupta

🏠 [Personal Webpage](#) ✉ [lakshgupta.phy@gmail.com](mailto:lakshgupta.phy@gmail.com) 🌐 [GitHub](#) 📍 Bengaluru, India

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, Ahmedabad University** August 2020 - June 2024  
GPA - 3.32/4

*Relevant Coursework:* 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

**12th Grade, La Martiniere College, Lucknow** March 2020  
Score - 81.2%

**10th Grade, La Martiniere College, Lucknow** March 2018  
Score - 84.8%

## SKILLS

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

## RESEARCH EXPERIENCE

**Research Intern** May 2024 - Present  
*Supervisor: Professor Samyaday Choudhury* Ahmedabad University

## PROJECTS

**Undergraduate Thesis: Study of white dwarfs in the globular cluster NGC2808** July 2023 - June 2024  
*Supervisor: Professor Samyaday Choudhury* Ahmedabad University

- 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 ( $\omega$ ) of the neodymium magnets from the nail-motor experiment apparatus using Tracker software.
- Using  $\omega$  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)