

Myra Khandelwal

AstroPhysics Student | Python Enthusiast | Researcher

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Education

UC San Diego

B.Sc. in Physics (spe. in Astrophysics), Mathematics, Minor in CSE (tentative)

Expected Graduation: December 2026

Relevant Coursework:

UD Electronics Lab	Stochastic Processes	Directed Group Study for Physics
Real Analysis	Complex Analysis	Abstract Algebra
Applied Linear Algebra	Mathematical Reasoning	Probability
Observational Astronomy Laboratory	Electrodynamics	Data Structures
General Relativity	Graduate Level String Theory (Audit)	Quantum Mechanics
Stellar Structures and Evolution	Fourier Analysis	Computational Physics

Research Experience

Undergraduate Research Participant

Jan 2023 - Jun 2023, Sept 2025 - Present

Center for Astrophysics and Space Sciences, UC San Diego — Advisor: Dr. George Fuller

- Implemented dark matter density profile models to fit observational data
- Ran simulations with REBOUND/REBOUNDx packages and techniques
- Collaborated with graduate students on paper preparation

Mathematics Research Trainee

Summer 2025

Department of Mathematics, UC San Diego — Advisor: Professor Vishal Patel

- Investigated topological jamming phenomena using Monte Carlo methods and statistical mechanics approaches
- Applied knot theory and topological constraints to study force distributions in entangled polymer systems
- Implemented Markov Chain Monte Carlo simulations to study phase transitions in jammed systems

Technical Projects

SmartLearning Package

Jan 2025 - Present

- Developed comprehensive $\LaTeX$ package for physics education with 15+ customizable templates
- Implemented automated equation formatting and citation management for lab reports
- Created quantum mechanics cheat sheet used by 100+ students in PHYS 130 series

Technologies: $\LaTeX$, Python scripts for automation, Git version control

Leadership & Outreach

Associate Member, Sigma Xi: The Scientific Research Honor Society

Dec. 2025 - Present

- In the process of revitalizing the local chapter of the organization as Chapter Representative for San Diego County to promote excellence in research and learning beyond the classroom
- Inducted based on research achievements and engagement in astrophysics
- Engage with multidisciplinary community of 200+ researchers from nationwide STEM departments
- Attend invited talks from distinguished scientists and participate in chapter outreach initiatives

Co-Organizer, Conference for Undergraduate Women & Gender Minorities in Physics

Jan 2025

- Coordinated and organized 3-day conference for 150+ participants from 20+ institutions, along with designing the official logo for the conference
- Secured \$5,000 in funding from physics department and corporate sponsors
- Managed schedule of 25+ technical talks and networking sessions

Instructor, Computational Astrophysics Research Preparation Workshop (CARP)

May 2024

- Developed and delivered curriculum on Python for astronomical data analysis
- Mentored 30 undergraduate students in computational techniques and best practices
- Created Jupyter notebook tutorials on data visualization and statistical analysis

Outreach Officer & Strategic Advisor, The Astronomy Club

Sep 2022 - Present

- Forged strategic partnerships with external scientific institutions, hosting research scientists from Los Alamos National Laboratory (LANL) for specialized talks and career panels
- Established collaboration with the Fleet Science Center, creating volunteer opportunities for 25+ club members to engage with the broader San Diego community

- Organized educational trip to Palomar Observatory, providing 40+ students with hands-on observational experience and professional telescope access
- Organized monthly public stargazing events that now regularly attract 75+ community members

Technical Skills

Programming:	Python (Expert: NumPy, Pandas, AstroPy, Scikit-learn, Matplotlib), MATLAB (Advanced), Java, html, R, AI and automations, Blender, SQL (Intermediate), $\text{\LaTeX}$ (Expert), Git (Intermediate)
Research Methods:	Data Analysis, Statistical Modeling, Numerical Simulation, Signal Processing, Machine Learning, High-Performance Computing
Software & Tools:	Suite Google Suite, macOS, Microsoft Office Suite, Github, VS Code, Jupyter, R studios

Presentations & Talks

Talks on "Dark Matter and How it Affects the Physics Around Us"

- At the [Inaugral Society of Physics Students Zone 28 meeting at San Diego State University](#) **April 22, 2023**
- At [Transfer Tritons Day at UCSD](#) **May 6, 2023**
- At Cohort Program Meeting at UCSD **May 8, 2023**
- [Student Lightning Talk on Dark Matter](#), *Society of Physics Student (SPS), UCSD* **October 2023**
- Invited talk presenting current research on dark matter detection methods to 75+ attendees
- Discussion of gravitational lensing and rotation curve analysis techniques

Awards & Honors

- **Undergraduate Physics Stipend** **2025**
UC San Diego Physics Department - \$1,500 award for electronics course material enhancement and development
- **Academic Scholar Award** **2020-2022**
Delhi Public School Haridwar - Top 5% of graduating class of over 500 students for academic excellence

Professional Development

- **Member, Association of Women in Science (AWIS) - San Diego Chapter** **2024 - Present**
- **Volunteer & Instructor, Young Physicists' Program, Department of Physics, UC San Diego** **2023 - Present**
- **Microsoft Excel Specialist Certification, Coursera** **2024**
- **Scikit-Learn for Machine Learning Certification, Coursera** **2024**
- **Mentor for Incoming Freshman, Mentor Collective** **2023 - Present**
- **Volunteer Instructor, BE WiSE, Department of Astronomy & Astrophysics, UC San Diego** **Feb. 2024**
- **Volunteer Panelist and Chaperone, STEM Girl Summer Graduate Women in Physics, UC San Deogo** **July 2025**
- **Local Organization Committee, Entrepreneurship Summer Bootcamp, 21iQInnovation** **Summer 2024**