

Rachel M. White

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Undergraduate researcher in astronomy and astrophysics seeking a Ph.D. in physics to advance neutrino detection instrumentation and radio detection methods, with experience spanning radio experiments, neutrino mass experiments, and machine learning-based event reconstruction.

EDUCATION

The Ohio State University, Columbus, OH 2022 - Expected 2026
B.S. Astronomy and Astrophysics, Theatre Minor
3.964 GPA

RESEARCH EXPERIENCE

Undergraduate Student Researcher, The Ohio State University, Columbus, OH 2024 – Present
College of Arts and Sciences, Center for Cosmology and AstroParticle Physics (CCAPP)

Advisor: [Professor]

- Utilized a Monte Carlo simulation and real data from the NASA-funded ANITA-III flight
- Developed correlation maps for image analysis with machine learning
- Modeled simulation dataset to assess consistency with previous collaboration publications

NSF Physics REU Student Researcher, Penn State University, University Park, PA 2025
Eberly College of Science, Department of Physics

Advisor: [Professor]

- Contributed to Project 8, neutrino mass experiment
- Electromagnetically simulated and characterized prototypes of resonant cavities
- Trained and applied machine learning model to correct systematic fluctuations

Polaris Program Mentee, The Ohio State University, Columbus, OH 2023 – 2024
College of Arts and Sciences, Polaris Mentorship Program

PhD Candidate Mentor: [Redacted]

- Simulated Gaussian beams to explore the effects of aberrations on orbital angular momentum
- Collaborated with a graduate student mentor to design and communicate research findings

HONORS & AWARDS

Dean's List, The Ohio State University 2022 – 2026

- Recognized for academic excellence by completing the semester with a GPA of 3.5 or higher

Maximus Scholarship, The Ohio State University 2022 – 2026

- Awarded for academic excellence, providing merit-based support for four years

Ralph J. & Mabel C. Gooding Memorial Scholarship, Delaware County Foundation 2023 - 2025

- Awarded three times, from 2023-2025, for academic achievement and community involvement

Honda-Ohio State STEM Award, The Ohio State University 2022

- Selected as [High School]'s nominee among 400+ graduating students, awarded by Ohio State in recognition of academic excellence as an incoming undergraduate STEM student

PRESENTATIONS

Poster Presentations

- **White, R.**, [Redacted]. *Development of Resonant Cavities for Project 8 Neutrino Mass Experiment*. APS Global Physics Summit Conference, 2026.
- **White, R.**, [Redacted]. *Development of Resonant Cavities for Project 8 Neutrino Mass Experiment*. SACNAS NDiSTEM Conference, 2025.
- **White, R.**, [Redacted]. *Development of Resonant Cavities for Project 8 Neutrino Mass Experiment*. NSF Sustainable Physics REU at Penn State University, 2025.
- **White, R.**, [Redacted]. *Optical Aberrations in Ultra-high Intensity Lasers*. Polaris Mentorship Program Symposium at The Ohio State University, 2024.

Oral Presentations

- **White, R.**, [Redacted]. *Exploring a Loop Antenna as an Alternate Readout System*. Project 8 Collaboration Meeting, 2025.
- **White, R.**, [Redacted]. *Development of Resonant Cavities for Project 8 Neutrino Mass Experiment*. NSF Sustainable Physics REU at Penn State University, 2025.

CONFERENCES

APS Global Physics Summit Conference, Denver, CO 2026

SACNAS NDiSTEM Conference, Columbus, OH 2025

Conference for Undergraduate Women in Physics (CUWiP), West Virginia University 2024

LEADERSHIP

MoMentUM Mentorship Program, The Ohio State University 2025 – Present

Co-Founder, VP of Outreach, Mentor

- Established 30+ mentor-mentee pairings in core physics courses to foster community and improve academic success
- Led mentor training, set program expectations, and facilitated bi-weekly academic and career development meetings
- Promoted the program through social media, campus flyers, and in-class presentations.
- Served as a mentor, providing individualized guidance on study strategies, campus resources, extracurricular opportunities, and professional development

Off the Lake Productions, The Ohio State University 2022 – Present

Publicity Chair, Choreographer

- Led large ensembles (30+ performers) as choreographer, developing leadership, instruction, and team coordination skills
- Managed all publicity efforts, increasing social media following by 150% and creating flyers, playbills, and merchandise to boost engagement
- Collaborated with the executive board to organize 5+ annual productions, honing project management and cross-functional teamwork

LICENSES & CERTIFICATIONS

My Green Lab Ambassador , My Green Lab	2025
Sustainability in Research , NSF Sustainable Physics REU at Penn State University	2025

COURSES

Physics

Advanced Electricity and Magnetism Honors, Statistical Mechanics, Intermediate Electricity and Magnetism Honors, Quantum Mechanics Honors, Intermediate Classical Mechanics I & II, Experimental Physics Instrumentation and Data Analysis Lab

Astronomy

Principles of Stellar Evolution and Nucleosynthesis, Methods of Astronomical Observation & Data Analysis, Stellar, Galactic and Extragalactic Astrophysics, Astronomy Data Analysis Using Python

Mathematics

Ordinary and Partial Differential Equations, Linear Algebra, Multivariable Differential and Integral Calculus III

SKILLS

General Computer

Windows, Mac OS, UNIX systems, LaTeX, Visual Studio Code, Microsoft Office

Data Analysis and Programming

Python, C++, High-Performance Computing Clusters (Supercomputer environments, batch jobs, SLURM), Machine Learning (LSTM, CNN, ViT), Mathematica, Version Control (Git/GitHub), Simulation (HFSS)

Hardware

Vector Network Analyzer (VNA), LIBRE-GUI Calibration, Arduino, Bead-Puller System

Communication

Scientific Communication, American Sign Language (Working Proficiency), Graphic Design, Poster Creation, Public Speaking