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## OVERVIEW

I am a first-year PhD student specializing in computational astrophysics. My research interests are gravitational waves, active galactic nuclei, supernovae, and supernova remnants. I conducted research all four years of my undergraduate career, focused primarily on the topic of supernova remnants. I completed two NSF REUs: one at North Carolina State University in 2022, and one at the University of Birmingham in 2023. I currently work as a Teaching Assistant and have pedagogical knowledge from working as an undergraduate Learning Assistant. I was actively involved in many organizations during my undergraduate experience, including Rutgers Astronomical Society, Rutgers STEM Ambassadors, the School of Arts and Sciences Honors Program, and the Douglass Residential College.

## EDUCATION

Rutgers University, New Brunswick, NJ — September 2020 to May 2024
**Bachelor of Science in Astrophysics** — **GPA: 3.86/4.00**
**Minor in Art** — ***summa cum laude***

Rochester Institute of Technology, Rochester, NY — August 2024 to August 2029
**PhD in Astrophysical Sciences and Technology**, *in progress* — **GPA: 3.83/4.00**

## AWARDS & GRANTS

- Henry Rutgers Scholar Award (2024): Outstanding senior thesis award
- Phi Beta Kappa Society (2024): Honors society
- Aryabhata Endowed Award in Astronomy (2023-2024): Academic merit award
- Rutgers Department of Physics and Astronomy Highest Honors in Astronomy (2023-2024)
- NSF Graduate Research Fellowship Program – Honorable mention (2024)
- AAS Chambliss Astronomy Achievement Student Award – Honorable mention (2024)
- NASA New Jersey Space Grant Consortium academic year internship (2022-23)
- Dean's List (Spring 2024, Fall 2023, Spring 2023, Fall 2022, Spring 2022, Spring 2021, Fall 2020)
- Physics and Astronomy Noémie B. Koller Scholarship (2023): Academic merit award
- SAS Excellence Award - Rutgers College Scholarship (2022): Academic merit award
- Physics and Astronomy Robert L. Sells Scholarship (2022): Academic merit award
- SAS Excellence Award - Art and Fran Reiner Scholarship (2022, 2021): Academic merit award
- Gloria Flaherty Scholarship (2021): Academic merit award
- Dr. and Mrs. Edmond Lipton Scholarship (2021): Academic merit award
- Alan H. Midelton Scholarship (2020): Academic merit and essay award
- NAACP Scholarship (2020): Academic merit and essay award
- Atlantic City Education Foundation Book Scholarship (2020): Academic merit and essay award

## RESEARCH EXPERIENCE

**Modeling Supernova Remnants with Asymmetric Ambient Medium** (September 2022 - Present)
Completed 3 hours/week of research over the 2022-23 academic year and 9 hours/week over the 2023-24 academic year for a Senior Honors Thesis. Conducted a research project under the mentorship of Dr. John Blondin, Dr. John P. Hughes, and Dr. Stephen Reynolds. Modified a version of the Virginia Hydrodynamics 1 code to hydrodynamically evolve supernova remnants into an asymmetric ambient medium in three dimensions. Earned a 2022-2023 NASA New Jersey Space Grant Consortium academic year internship for this work, along with highest departmental honors and the Henry Rutgers Scholar Award for an outstanding senior thesis. Currently preparing a publication for this project.

**Assessing the Observability of Higher Order Modes and their Impact on the Localization of Gravitational Wave Sources** (May - August 2023)
Actively participated in a 10-week summer research experience at the University of Birmingham in the United Kingdom. Placed at the University of Birmingham through the University of Florida International Gravitational Physics Research

Experience for Undergraduates funded by the National Science Foundation. Conducted a research project under the mentorship of Dr. Patricia Schmidt and Dr. Geraint Pratten. Calculated signal-to-noise ratios for gravitational wave strains for a population of simulated black hole binary systems. Ran several parameter estimations for a specific neutron star-black hole injection.

**Modeling Pair Instability Supernovae: from Explosion to Remnant** (May - August 2022)
Led research project and participated in the Computational and Data Science in Astrophysics (CDSA) program. CDSA is a 10-week Research Experience for Undergraduates at North Carolina State University funded by the National Science Foundation. Modified a version of the Virginia Hydrodynamics 1 code to hydrodynamically evolve a Pair Instability Supernova model under the mentorship of Dr. Carla Frohlich, Dr. John Blondin, and Dr. Stephen Reynolds.

**Estimating the Age and Ambient Medium Density of SNR 0509-67.5** (September 2021 - May 2022)
Completed 3 hours/week of research over the academic year within Dr. John P. Hughes' research group. Studied self-similarity and the methods used in a particular research study with which to determine values of ambient medium density and age of a supernova remnant. Given values for explosion energy and mass, constrained values for the ambient medium density around the supernova remnant and the age of the remnant.

**Stats and Stars: Data Fitting with Python and its Applications to Type Ia SNRs** (May - September 2021)
Completed 200 hours of research during the summer within Dr. John P. Hughes' research group. Studied data-fitting techniques, including the Markov Chain Monte Carlo (MCMC) method. Also learned about the applications of self-similarity and MCMCs to studying Type Ia supernova remnants.

**Type Ia Supernovae and the Study of Large Magellanic Cloud Supernova Remnant 0509-67.5** (January - May 2021)
Completed 5 hours/week of research over a semester within Dr. John P. Hughes' research group. Learned about Type Ia supernova explosions and remnants. Conducted an in-depth literature review of a published scientific paper written by a previous research group member.

## SCIENTIFIC PRESENTATIONS

- 2024 American Astronomical Society Winter Meeting
- 2024 APS Conference for Undergraduate Women in Physics poster session
- 2023 UFL Gravitational Physics International REU final presentations at the Virgo interferometer
- 2023 NASA New Jersey Space Grant Consortium poster session
- 2022 Summer Undergraduate Research Poster Session at NCSU
- 2022 five-minute talk at "Science talks for the public" at the North Carolina Museum of Natural Sciences
- 2022 APS Conference for Undergraduate Women in Physics poster session
- 2021 Project SUPER Virtual Research Symposium
- 2021 Introduction to Scientific Research Virtual Symposium

## POSITIONS

**Teaching Assistant**, Rochester Institute of Technology, Rochester, NY August 2024 – May 2025
Led recitations and assisted undergraduate students in learning College Physics I and II (algebra-based physics).

**Learning Assistant**, Rutgers University, New Brunswick, NJ September 2022 - December 2022
September 2021 - December 2021
Led recitations alongside a Teaching Assistant and assisted undergraduate students in learning Analytical Physics Ia.

## ORGANIZATIONS & EXTRACURRICULAR

**Rutgers School of Arts and Sciences Honors Program** (Member 2021-2024)

- Completed Honors Courses and demonstrated proficiency in a global language (Portuguese) through the intermediate level. Executed a Capstone project, which doubled as a Senior Honors Thesis.

**Douglass Residential College** (Member 2020-2024)

- Member of the Douglass Residential College, a residential women's college which aims to empower women through creating a smaller community within Rutgers University and providing professional development programs. Attended and volunteered at Douglass events.

**Rutgers Astronomical Society** (President 2023-24, Vice President 2022-23, General Member 2020-22)

- Led undergraduate presentations on astronomical topics, oversaw weekly observation nights, and planned events. Coordinated with the Rutgers Department of Physics and Astronomy.
- Personally coordinated and led three Girl Scout Troop visits to the Rutgers Department of Physics and Astronomy and their tours of the Robert A. Schommer Astronomical Observatory. Created slides and presented on basic astronomy, which included physics demonstrations.

**Rutgers STEM Ambassadors Club** (Treasurer 2021-23, General Member 2020-21)

- Oversaw the club's finances and hosted workshops, panels, and networking events to empower women in STEM (Science, Technology, Engineering, and Math).

**Rutgers Minorities in Physics and Astronomy (MiPA)** (Undergraduate Chair, 2023-24)

- Assisted in creating community between graduate and undergraduate minority groups in the Rutgers Department of Physics and Astronomy. Coordinated events between MiPA, the Society for Physics Students, and the Rutgers Astronomical Society.

**Interests**- Visual art, ukulele, guitar, jewelry making