

ABRA GEIGER

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EDUCATION

Cornell University, Ithaca, NY

B.A., Physics and Math, Minor in Astronomy, 2022 to 2026 (expc.)

GPA: 3.919

RESEARCH EXPERIENCE

Cordes Radio Astronomy Lab

Research Assistant

Cornell University

Sept 2022 - Present

- Expand upon analysis of previous extreme and variable interstellar scattering for the millisecond pulsar J1903+0327
- Simulate and quantify the intricacies of the effects of interstellar scattering on pulsar observation for application to North American Nanohertz Observatory for Gravitational Waves (NANOGrav) pulsar timing and more generally
- Install and operate the Cornell Global Radio Explorer (GREx) Radio Telescope

Lam Radio Astronomy Lab

Research Assistant

Rochester Institute of Technology

Sept 2021 - Aug 2022

- Measure and analyze interstellar scattering variations for the millisecond pulsar J1903+0327 for application to NANOGrav
- Model autoregressive variations in timing residuals for the millisecond pulsar B1937+21

PUBLICATIONS

1. **Geiger, A., & Lam, M. T.** 2022. *The Frequency-Dependent Scattering of Pulsar J1903+0327*. NANOGrav Memo Series No. 8, Tech. rep., NANOGrav

PRESENTATIONS

1. *Probing Interstellar Turbulence and Its Intermittency Through Observation of a Millisecond Pulsar*, 2023, Cornell Arts & Sciences Nexus Capstone Presentations
2. *Detecting Gravitational Waves with Pulsars*, 2023, Fairport High School Physics Club
3. *The Frequency-Dependent Scattering of Pulsar J1903+0327*, 2023, Cornell Astronomy Undergraduate Research Poster Forum
4. *The Frequency-Dependent Scattering of Pulsar J1903+0327*, 2023, Cornell Undergraduate Research Board Spring Symposium
 - Awarded Best in Category for Physical Sciences
5. *The Frequency-Dependent Scattering of Pulsar J1903+0327*, 2023, APS Conference for Undergraduate Women in Physics
6. *The Frequency-Dependent Scattering of NANOGrav Pulsar J1903+0327*, 2022, Rochester Institute of Technology Undergraduate Research Symposium

RECOGNITION

Cornell Arts & Sciences Nexus Scholar (2023)
 Dean's List Awardee (FA22, SP23)
 NANOGrav Junior Member (2022-Present)
 AP Scholar with Distinction (2022)
 Donald F. and Maxine B. Davison Foundation Scholarship Recipient (2022)
 George Eastman Young Leaders Award Recipient (2021)
 Clarkson University Leadership Scholarship Recipient (2021)

TEACHING EXPERIENCE

PHYS 1116: Honors Mechanics and Special Relativity

Cornell University

- Fall 2023 - Undergraduate Teaching Assistant with Prof. Thomas Hartman
- Spring 2023 - Undergraduate Teaching Assistant with Prof. Natasha Holmes

SERVICE

Women in Physics Chair, *Cornell Society of Physics Students*

Feb 2023 - Present

- Spearhead Fun Physics for Fifth, a bi-weekly outreach partnership with the Physics Bus for Fall Creek Elementary students
- Develop "A Physicist Is" with Prof. Natasha Holmes to highlight diversity of physics careers and identities
- Serve as a student-faculty liaison on the Cornell Physics Department Committee for Climate, Equity, Diversity, and Inclusion
- Plan and host events for physics students, particularly for women and minorities

Outreach Co-Director, *The Stemminist Movement* | *Cornell Chapter*

Nov 2022 - Present

- Co-lead a committee of 5-6 members to organize approximately 10 STEM outreach programs for middle school students each year
- Train my co-director and committee members with regards to the organization's workflow and event planning
- Foster an empowering community for women in STEM at Cornell and beyond through professional development workshops, invited talks, socials, and more

Keyholder, *Cornell Astronomical Society*

Feb 2023 - Present

- Manage sky tours and telescope observing for weekly open houses at Cornell's Fuertes Observatory
- Write a monthly astrophysics column in our newsletter

Treasurer, *Ballet & Books* | *Ithaca Chapter*

Jan 2023 - Present

- Plan and teach ballet classes to about 15 students aged 6-9 years
- Manage club logistics including show planning, finances, and fundraisers

Orientation Leader, *Cornell Tatkon Center for New Students*

Aug 2023 - Sept 2023

- Facilitate small group sessions and large-scale events with new students
- Support and guide new students through the transition to campus life
- Engage in training for developing inclusive spaces, building connections, and strengthening teamwork.

Vice President, *Court-Kay-Bauer Residence Hall Student Council*

Sept 2022 - June 2023

- Plan and run events for the 275+ residents of Court-Kay-Bauer Hall every 1-to-2 months
- Collaborate with other Hall Councils and Residential Student Congress for larger scale events

Volunteer, *Rochester Museum and Science Center*

Dec 2022 - Jan 2023

- Present the Science On A Sphere exhibit and its connection to scientific research and discovery
- Monitor and tidy the museum and assist with other operational tasks as needed

RELEVANT COURSEWORK

PHYS 2217: Honors Electricity and Magnetism

PHYS 1116: Honors Mechanics and Special Relativity

PHYS 1110: Introduction to Experimental Physics

ASTRO 2211: Stars, Galaxies, and Cosmology

MATH 2930: Differential Equations for Engineers

MATH 1920: Multivariable Calculus for Engineers

CS 1110: Introduction to Computing Using Python