

# ABRA GEIGER

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## EDUCATION

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**Cornell University**, Ithaca, NY

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

GPA: 3.919

## RESEARCH EXPERIENCE

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**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

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

## PRESENTATIONS

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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

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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

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### 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

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### 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

### Vice President, *Court-Kay-Bauer Resident 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**

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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