

ABRA GEIGER

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EDUCATION

Cornell University, Ithaca, NY

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

GPA: 4.00

PUBLICATIONS

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

RESEARCH EXPERIENCE

Ravi Astronomy Lab

Research Assistant

California Institute of Technology

June 2024 - August 2024

- Simulated spectroscopic absorption and emission from circumgalactic clouds of gas and dust to better understand them
- Conducted optical spectroscopic observations of globular clusters at the Keck and Palomar observatories
- Prepare a paper for publication focusing on forecasting for upcoming spectroscopic surveys of the Milky Way

Cordes Radio Astronomy Lab

Research Assistant

Cornell University

Sept 2022 - Present

- Analyze interstellar scattering utilizing python for application to pulsar timing as a junior member of the North American Nanohertz Observatory for Gravitational Waves, NANOGrav (a continuation of previous scattering work below)
- Write scientific publication on scattering research (Geiger et al. in prep) and conduct literature reviews
- Install and operate the Cornell Global Radio Explorer (GRex) Radio Telescope
- Collaborate and discuss weekly project reports with team of professors and researchers

Lam Radio Astronomy Lab

Research Assistant

Rochester Institute of Technology

Sept 2021 - Aug 2022

- Measured and analyzed interstellar scattering variations for millisecond pulsar J1903+0327 utilizing python
- Modeled autoregressive variations in timing residuals for millisecond pulsar B1937+21 utilizing python
- Presented and discussed progress in weekly meetings with a team of pulsar timing researchers

AWARDS AND FELLOWSHIPS

Caltech Summer Undergraduate Research Fellowship (2024)

McNair Scholar (2023-2026)

Cornell Arts & Sciences Nexus Scholar (2023)

Dean's List Awardee (FA22, SP23, FA23, SP24)

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)

PRESENTATIONS

- Caltech Student-Faculty Programs Final Presentations** August 2024
Tracing the Milky Way Circum-Galactic Medium With Optical Spectroscopy
- Cornell Astronomy Undergraduate Research Poster Forum** May 2024
Probing Interstellar Turbulence and Precision Pulsar Timing with PSR J1903+0327
- Awarded 2024 Friends of Astronomy Undergraduate Poster Winner
- American Astronomical Society Winter Meeting** January 2024
Probing Interstellar Turbulence and Precision Pulsar Timing with PSR J1903+0327
- Cornell Arts & Sciences Nexus Capstone Presentations** July 2023
Probing Interstellar Turbulence and Its Intermittency Through Observation of a Millisecond Pulsar
- Cornell Astronomy Undergraduate Research Poster Forum** May 2023
The Frequency-Dependent Scattering of Pulsar J1903+0327
- Cornell Undergraduate Research Board Spring Symposium** May 2023
The Frequency-Dependent Scattering of Pulsar J1903+0327
- Awarded Best in Category for Physical Sciences
- APS Conference for Undergraduate Women in Physics** January 2023
The Frequency-Dependent Scattering of Pulsar J1903+0327
- Rochester Institute of Technology Undergraduate Research Symposium** July 2022
The Frequency-Dependent Scattering of NANOGrav Pulsar J1903+0327

TEACHING EXPERIENCE

- PHYS 1116: Mechanics and Special Relativity** **Cornell University**
Undergraduate Teaching Assistant Jan 2023 - Dec 2023
- Collaborate with professors and graduate student TAs to support students in augmented introductory physics
 - Host weekly office hours to aid students in homework completion and content comprehension

LEADERSHIP AND SERVICE

- Cornell Society of Physics Students** **Cornell University**
Vice President Dec 2023 - Present
- Organize and oversee ~ 10 physics events per semester, collaborating with the president and executive board
 - Lead our undergraduate peer mentorship program and our undergraduate-graduate mentorship program
 - Serve on the CEDI committee and continue the "A Physicist Is" project (more information below)
- Women in Physics Chair* Feb 2023 - Dec 2023
- Spearhead tri-weekly outreach for ~ 40 local fifth grade students by gathering and training volunteers, communicating weekly physics concepts, and coordinating with local fifth grade teacher and The Ithaca Physics Bus

- Plan and host ~ 10 physics events per semester: including professional development workshops, speakers, etc
- Serve as a student-faculty liaison on the Cornell Physics Committee for Climate, Equity, Diversity, and Inclusion (CEDI)
- Develop "A Physicist Is" under Prof. Holmes to highlight the diversity of careers and people in physics

The Stemminist Movement

Cornell Chapter

Outreach Co-Director

Nov 2022 - May 2024

- Co-lead a committee of 5 members to organize ~ 10 STEM outreach programs for middle school students each year
- Train co-director and committee members in organizational 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

Cornell Astronomical Society

Cornell University

Keyholder

Feb 2023 - Present

- Manage sky tours and telescope observing for weekly open houses at Cornell's Fuertes Observatory
- Write astrophysics columns in our newsletters

Ballet & Books

Ithaca Chapter

Treasurer

Jan 2023 - Present

- Manage club logistics including semesterly show planning, fundraisers, finances, and funding allocation

Dance Teacher

Sept 2022 - Present

- Lead weekly ballet classes for ~ 15 students aged 6-9 years, managing a team of 2 teaching assistants

Cornell Tatkon Center for New Students

Cornell University

Orientation Leader

Aug 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

Court-Kay-Bauer Residence Hall Student Council

Cornell University

Vice President

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

Rochester Museum and Science Center

Rochester, NY

Volunteer

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

SKILLS

Programming: Python, Java, Latex, HTML, Beginner C++

Computer: UNIX, Microsoft (Word, Powerpoint, Excel, Office), Google Workspace

Language: Native Fluency in English, Intermediate French

AFFILIATIONS

Junior Member, North American Nanohertz Observatory for Gravitational Waves

Member, American Astronomical Society

Member, American Physical Society

Member, Society of Physics Students