

Natalie Allen

Johns Hopkins University
nataliehallen.com
(206) 265-0789
nallen19@jhu.edu

EDUCATION **Johns Hopkins University** Expected Graduation: 2025
• Ph.D. in Astrophysics

University of Rochester Graduation: May 2020
• B.S. in Physics and Astronomy, Minor in Mathematics
– *Cum Laude* with Highest Distinction (GPA: 3.86/4.0)
• Senior Thesis: *A Study of the Emission Line Structure of HH 7-11 with Hubble and Spitzer*
– Advisor: Dan Watson

RESEARCH INTERESTS Exoplanets: observation, atmospheres, habitability, biosignatures, astrobiology

RESEARCH **Johns Hopkins University**
Research Assistant (Advisor - [Dr. Néstor Espinoza](#)) Fall 2020 - Present
• Precise ground-based transit spectroscopy of exoplanets on the search for constraints on morning/evening terminator inhomogeneities

Research Assistant (Advisor - [Dr. David Sing](#)) Fall 2020 - Present
• Space-based UV to IR transit spectroscopy of giant planets as part of the PanCET Program
• Studying the feasibility of hot terrestrial planet transit spectroscopy around nearby stars with JWST

University of Rochester
Research Assistant (Advisor - [Dr. Dan Watson](#)) Spring 2017 - Present
• Research in star formation and outflows, primarily in nearby region NGC 1333
• Ran shock simulations using MAPPINGS V and wrote code in Python to match observational data from both the Spitzer and Hubble Space Telescopes to simulated data
• Reduced data from Hubble Space Telescope observations

Research Assistant (Advisor - [Dr. Miki Nakajima](#)) Spring 2019 - Present
• Research in terrestrial impact craters
• Ran simulations of the Vredefort crater impact in shock simulation iSALE
• Made comparisons of simulation results with geophysical evidence and compared to past studies

NASA Jet Propulsion Lab Summer 2019
Research Intern (Advisor - [Dr. Karl Stapelfeldt](#))
• Analyzed data from a number of different telescopes to explore star formation feedback and shock physics

- Began work on first-authored paper (will be submitted for peer review in winter)
- Attended [Sagan Summer Workshop on Astrobiology](#)

Space Telescope Science Institute

Summer 2018

Visiting Scientist (Guest of [Dr. Joel Green](#))

- Shared star formation research results with collaborators at Johns Hopkins University and Space Telescope Science Institute
- Wrote python code to analyze data from extreme stellar outflows
- Continued collaboration after summer position finished

CONFERENCE TALKS/ POSTERS

N. Allen, M. Nakajima, S. Helhoski, K. Wnnemann, D. Trail. *Simulating the Impact Formation of the Vredefort Crater*. In Prep.

N. Allen, T. Bergin, A. Frank, T.N. Gautier. J. Green, S.T. Megeath, G. Melnick, D. Neufeld, K. Stapelfeldt, D. Watson. *A Study of the Infrared Emission Line Structure of HH 7-11 with Hubble and Spitzer*. In Prep.

N. Allen, M. Nakajima, S. Helhoski, K. Wnnemann, D. Trail. [Simulating the Formation of Earth's Largest Impact Crater](#). *52nd Lunar and Planetary Science Conference*, Virtual, March 17, 2021.

N. Allen, K. Stapelfeldt, D. Watson, T. Bergin, A. Frank, T.N. Gautier. J. Green, S.T. Megeath, G. Melnick, D. Neufeld, A. Rubinstein. [A Study of the Infrared Emission Line Structure of HH 7-11 with Hubble and Spitzer](#). *American Astronomical Society, AAS Meeting #235*, Honolulu, HI, January 6, 2020.

N. Allen, T. Bergin, A. Frank, T.N. Gautier. J. Green, S.T. Megeath, G. Melnick, D. Neufeld, K. Stapelfeldt, D. Watson. [Outflows and star-formation feedback from young stellar objects in NGC1333](#). *American Astronomical Society, AAS Meeting #233*, Seattle, WA, January 7, 2019.

N. Allen, D. Watson. [Outflows and star-formation feedback from young stellar objects in NGC1333](#). *Maria Mitchell Women in Science Symposium*, Wellesley, MA, October 6, 2018.

N. Allen, T.P. Jacques. [Outflows and star-formation feedback from young stellar objects in NGC1333](#). *Conference for Undergraduate Women in Physics*, Rochester, NY, January 13, 2018.

OBSERVING

Apache Point Observatory

- PI: Confirmation of an Optical Slope in the Atmosphere of WASP-69b
 - First transit spectroscopy with APO
 - One of the first uses of the KOSMOS Instrument

Hubble Space Telescope

- Co-I (PI David Sing): Sculpting Hubble's Exoplanet Legacy: A Comprehensive Uniform Dataset of Exoplanet Transmission Spectra - Archival
- Co-I (PI David Sing): A Comparative Study of Planetary Atmospheres in Low-Metallicity Environments - 27 orbits

LEADERSHIP POSITIONS

Johns Hopkins University

Physics and Astronomy Graduate Students association Fall 2020 - Present

- Fall 2021 - Present: Second-year graduate student representative, Undergraduate liaison, No-PhDs Journal Club co-chair
 - Organized "Reading Program" undergraduate/graduate mentorship program
- Fall 2020 - Spring 2021: First-year graduate student representative, Undergraduate liaison co-chair
 - Helped to plan the prospective graduate student open house

University of Rochester

Society of Physics Students Fall 2017 - Spring 2020

(Secretary Fall 2017 - Spring 2018, President Fall 2018 - Spring 2019)

- Coordinated physics and astronomy intro level class tutoring
- Delegated executive board chairs and committees
- Helped plan outreach, social, and professional development events

Society of Women in Astronomy and Physics Fall 2017 - Spring 2020

(President, Fall 2017 - Spring 2019, Secretary Fall 2019 - Spring 2020)

- Co-founder, successfully proposed and accepted as official student organization
- Held social and professional development events to create a community for an underrepresented group in physics and astronomy
- Created outreach events to promote the development of women in STEM

HONORS AND AWARDS

[National Science Foundation Graduate Research Fellowship](#) 2020-2023

[Stoddard Senior Thesis Prize](#), U. of Rochester Physics and Astronomy 2020

[Janet Fogg Prize](#), U. of Rochester Physics and Astronomy 2020

[Undergraduate Teaching Award](#), U. of Rochester Physics and Astronomy 2020

[Barry M. Goldwater Scholarship](#) 2019-20

[USRA Distinguished Undergraduate Award](#) –
[Frederick A. Tarantino Scholarship](#) 2019

[Outstanding Chapter Award](#) -
[Society of Physics Students National](#) 2017-18, 2018-19

[Blake Lily Prize](#), [Society of Physics Students National](#) 2017-18, 2018-19

[Women in Physics Grant](#), [American Physical Society](#) 2018

[Excellence in Cosponsorship - Society of Physics Students](#), U. of Rochester 2018

[Whipple Science & Research Scholarship](#), U. of Rochester 2016-2020

TEACHING EXPERIENCE

University of Rochester

Department of Physics and Astronomy - Peer Advisor Fall 2019 - Spring 2020

[College Center for Advising Services](#)

- Advise Physics and Astronomy students on classes, research opportunities, etc.
- Hold office hours, coordinate events with Physics and Astronomy Department and Society of Physics Students

Department of Physics and Astronomy - Teaching Assistant Fall 2017 - Spring 2020

• [Astronomy 142: Elementary Astrophysics \(Honors\)](#) Spring 2019, 2020

• [Astronomy 111: The Solar System & Its Origin](#) Fall 2017, 2018, 2019

• [Astronomy 102: Relativity, Black Holes, and the Big Bang](#) Spring 2018

Society of Physics Students Workshops

Fall 2017 - Spring 2020

- Taught workshops on Mathematica and Python to college students
- Gave talks on research and college to high school students at Brighton High School

MEMBERSHIPS ACCESS Collaboration
[STARGATE Collaboration](#)
Phi Beta Kappa (ΦBK)
Sigma Pi Sigma ($\Sigma\Pi\Sigma$)
American Physical Society (APS)
American Astronomical Society (AAS)
Society of Physics Students (SPS)

COMPUTER SKILLS	Python	Igor Pro
	UNIX shell scripting (Bash)	TheSky6
	SAOImage DS9	CCDSOft
	Mathematica	CCDStack
	\LaTeX	Microsoft Office Suite