BERYL HOVIS-AFFLERBACH

ASTRONOMY PHD STUDENT

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EDUCATION

2023 - present **Northwestern University** — Evanston, IL
PhD student in Astronomy
Advisor: Prof. Allison Strom

2018 - 2023 **California Institute of Technology** — Pasadena, CA
Bachelor of Science, Astrophysics

PUBLICATIONS

The Mass Distribution of Stars Stripped in Binaries: The Effect of Metallicity
Hovis-Afflerbach, B., Götberg, Y., Schootemeijer, A., Klencki, J., Strom, A. L., Ludwig, B. A., Drout, M. R., 2024, *A&A* submitted

Partially Erupted Prominence Material as a Diagnostic of Coronal Mass Ejection Trajectory
Hovis-Afflerbach, B., Thompson, B. J., & Mason, E. I., 2023, *Space Weather*, 21, e2022SW003256

Two New Methods for Counting and Tracking the Evolution of Polar Faculae
Hovis-Afflerbach, B. & Pesnell, W. D., 2022, *Sol Phys*, 297, 48

Identifying and Repairing Catastrophic Errors in Galaxy Properties Using Dimensionality Reduction
Hovis-Afflerbach, B., Steinhardt, C. L., Masters, D., & Salvato, M. 2021, *ApJ*, 908, 148

The BUFFALO HST Survey
Steinhardt, C. L., et al., incl. **Hovis-Afflerbach, B**., 2020, *ApJS*, 247, 1538

AWARDS

2023	NSF Graduate Research Fellow	NSF
2022	Vodopia-Hasson Poster Competition Award	Caltech
2021	Chambliss Undergraduate Poster Award, AAS 238	AAS
2021	Perpall Speaking Competition Semifinalist	Caltech
2021	Carnegie Observatories Summer Student Poster Award	Carnegie Observatories
2019, 2022	George W. Housner Fund Recipient	Caltech
2018	National Merit Scholar	NMSC
2018	NASA GSFC Intern Research Poster Session Finalist	NASA GSFC
2017	NASA GSFC Intern Research Poster Session Award	NASA GSFC

RESEARCH EXPERIENCE

California Institute of Technology | Pasadena, CA

Flintridge Foundation SURF Fellow, Summer 2022
Advisors: Jim Fuller, Shing Chi Leung

- Adapted stellar evolution code MESA to model inward-moving, convectively-bounded flames in the degenerate cores of massive stars. Determined flame speed for varying conditions.

Carnegie Observatories | Pasadena, CA

Arthur R. Adams Memorial SURF Fellow, Summer 2021
Alain Porter Memorial SURF Fellow, Summer 2020
Advisor: Ylva Götberg

- Ran and analyzed stellar evolution models with MESA to predict conditions (mass, metallicity) under which stars stripped by binary companions are expected not to form.
- Used binary stellar population synthesis models to investigate effect of metallicity on mass distribution of stripped stars and to test theory using new observations of stripped stars in the Magellanic Clouds.

NASA Goddard Space Flight Center, Solar Physics Lab | Greenbelt, MD

Research Assistant, September 2020 - May 2021
Advisors: Barbara Thompson, Dean Pesnell

- Investigated how solar prominence motion can act as diagnostic of Coronal Mass Ejection behavior.
- Developed method to identify and track polar faculae on the sun and used method to investigate behavior of polar faculae over the solar cycle.

Cosmic Dawn Center, Niels Bohr Institute | Copenhagen, Denmark

David L. Glackin Memorial SURF Fellow, Summer 2019
Advisor: Charles Steinhardt

- Developed method using t-SNE (machine learning algorithm for dimensionality reduction) to identify and repair catastrophic errors in galaxy properties determined from photometry.

NASA Goddard Space Flight Center, Space Weather Lab | Greenbelt, MD

Space Weather Forecasting Intern, Summer 2018
Advisor: Barbara Thompson

- Compared behavior of solar prominences and coronal mass ejections to better understand the solar magnetic field and improve forecasting capabilities.
- Trained as independent space weather forecaster, one of five selected for work during school year.

NASA Goddard Space Flight Center, Solar Physics Lab | Greenbelt, MD

High School Research Intern, Fall 2016 - Summer 2017
Advisor: Barbara Thompson

- Tested and analyzed results from new method for mapping motion of solar prominences.
- Converted code for analysis from IDL to Python.

SELECTED ACADEMIC PRESENTATIONS

2024 / 05 — Poster — **Missing Massive Stripped Stars at Low Metallicity: Implications for High-Redshift Galaxies** — Flatiron Institute
First Stars VII

2024 / 02 — Talk — **Missing Massive Stripped Stars at Low Metallicity** — Northwestern University
CIERA Theory Group meeting

2023 / 01 — Poster — **A New Way to Model the Pre-Supernova Evolution of 8-11 $M_\odot$ Stars** — AAS
American Astronomical Society, AAS Meeting #241

2022 / 06 — Poster — **Testing Late Stellar Expansion with Populations of Stars Stripped in Binaries** — AAS
American Astronomical Society, AAS Meeting #240

2021 / 06 — Poster — **Two New Methods for Counting and Tracking the Evolution of Polar Faculae** — AAS
American Astronomical Society, AAS Meeting #238, won Chambliss Award

MENTORSHIP

2024 - present — **Physics & Astronomy graduate student peer mentoring** — Northwestern University
Peer mentor for 2 first year graduate students.

2022 & 2023 — **Mentor for undergraduate students in CASSI summer program** — Carnegie Observatories
As program alum, served as a mentor and resource to 2 in 2022, 1 in 2023.

OUTREACH

2025 — Volunteer — **CIERA Reaches Out to Chicago Schools (CROCS)** — Northwestern University
Visited local high schools and gave presentations and demonstrations on spectroscopy and gravitational waves.

2024 - present — Volunteer — **Astronomy Conversations** — Adler Planetarium
Held discussions with visitors to the planetarium and answered questions about astronomy, in the Adler Planetarium's Space Visualization Lab.

2023 - present — Volunteer — **Astronomy on Tap** — Northwestern University
Helped organize and run events for Chicago Astronomy on Tap.

2020 & 2021 — Panelist — **Upward Bound College Panel** — Carnegie Observatories
Answered questions from potential first-generation college students about college, admissions, and astronomy.

2021 — Panelist — **International Women's Day Panel** — Girl Up Club at Highland Park High School
Talked about careers in astronomy and answered questions about research, mentorship, and succeeding as a woman in STEM.

LEADERSHIP & SERVICE

2024 - present **Physics & Astronomy Graduate Student Council Secretary** — Northwestern University
Advocated for grad students in department, maintained website and mailing list, sent weekly emails, took meeting minutes.

2019 - 2022 **Equity & Title IX Advocate** — Caltech
Provided support for peers in cases relating to Equity & Title IX violations. Organized meetings to welcome new students and share Title IX resources.

2019 - 2022 **Board of Control Representative** — Caltech
Heard cases regarding alleged Honor Code violations, >100 hours.

2021 **CASSI DEI Programming** — Carnegie Observatories
Helped run DEI discussion for Carnegie Observatories summer program.

TEACHING EXPERIENCE

2025 / Winter **PHYSICS 135-3 — General Physics** — Northwestern University
Teaching assistant for introductory waves & optics.

2024 / Fall **PHYSICS 135-2 — General Physics** — Northwestern University
Teaching assistant for introductory electricity & magnetism.

SOFTWARE & LANGUAGES

Python ◆ MESA ◆ Cloudy ◆ PypeIt ◆ Linux ◆ IDL ◆ HTML ◆ CSS