BERYL HOVIS-AFFLERBACH

ASTROPHYSICS UNDERGRADUATE STUDENT

berylha.com | berylha@caltech.edu | @berylha_

EDUCATION

California Institute of Technology | Pasadena, CA

Astrophysics B.S. expected June 2023

Relevant coursework:

Physics of Stars ◆ Relativistic Astrophysics ◆ Physics of the Interstellar Medium ◆ Galaxies and Cosmology ◆ Optical Astronomy Instrumentation Lab ◆ Quantum Mechanics ◆ Waves, Quantum Physics, and Statistical Mechanics ◆ Classical Mechanics and Electromagnetism ◆ Mathematical Methods of Physics ◆ Machine Learning Systems ◆ Linear Algebra ◆ Probability and Statistics

RESEARCH EXPERIENCE

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 Small Magellanic Cloud.

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 early predictor of CME deflection and 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 (2018-2019, 12 hr/wk).

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.

PUBLICATIONS

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

PRESENTATIONS

AAS 240 Summer Meeting Poster Session, 2022

AGU Fall Meeting, 2021

Caltech Summer Undergraduate Research Fellowship Seminar Day, 2021 - **Award Semifinalist**

Carnegie Astrophysics Summer Student Internship Poster Session, 2021 - **Award**

AAS 238 Summer Meeting Poster Session, 2021 - **Chambliss Award**

AAS 237 Winter Meeting Poster Session, 2021

Caltech Summer Undergraduate Research Fellowship Seminar Day, 2020

AAS 235 Winter Meeting Poster Session, 2020

Caltech Summer Undergraduate Research Fellowship Seminar Day, 2019

NASA Goddard Summer Intern Poster Session, 2018 - **Award Finalist**

NASA Goddard Summer Intern Poster Session, 2017 - **Award**

AWARDS

2021 | Caltech Perpall Speaking Competition Semifinalist

2021 | Carnegie Observatories Summer Student Poster Award

2021 | Chambliss Undergraduate Poster Award, AAS 238

2021 | Arthur R. Adams Memorial SURF Fellow

2020 | Alain Porter Memorial SURF Fellow

2019 | George W. Housner Fund Recipient

2019 | David L. Glackin Memorial SURF Fellow

2018 | NASA GSFC Intern Research Poster Session Finalist

2018 | National Merit Scholarship Winner

2017 | NASA GSFC Intern Research Poster Session Award

SKILLS

Python ◆ MESA ◆ Linux ◆ IDL ◆ LaTeX ◆ Mathematica ◆ Java ◆ HTML ◆ CSS

OUTREACH

College Panel for Upward Bound Students, July 2020 & 2021

Highland Park High School Girl Up International Women's Day Panel, March 2021