BERYL HOVIS-AFFLERBACH

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EDUCATION

Caltech
Astrophysics
B.S. exp. June 2023
GPA: 3.6

COURSEWORK

Galaxies and Cosmology
Mathematical Methods of Physics
Machine Learning Systems
Waves, Quantum Physics, and Statistical Mechanics
Classical Mechanics and Electromagnetism
Linear Algebra
Probability and Statistics

SKILLS

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

RESEARCH

CARNEGIE OBSERVATORIES, Pasadena, CA
Summer Undergraduate Research Fellow, Summer 2020 & 2021

Ran and analyzed stellar evolution models with MESA to predict conditions under which stars stripped by binary companions are expected not to form. Modeled mass distribution to test theory using new observations of stripped stars in the Small Magellanic Cloud. Advisor: Dr. Ylva Götberg.

NASA GODDARD SPACE FLIGHT CENTER, SOLAR PHYSICS LAB
Research Assistant, September 2020 - May 2021

Investigated how solar prominence motion can act as early predictor of CME deflection and behavior. Advisor: Dr. Barbara Thompson.
Developed method to identify and track polar faculae on the sun and used method to investigate behavior of polar faculae over the solar cycle. Advisor: Dr. Dean Pesnell.

COSMIC DAWN CENTER, Niels Bohr Institute, Copenhagen
Summer Undergraduate Research Fellow, Summer 2019

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

NASA GODDARD SPACE FLIGHT CENTER, SPACE WEATHER LAB
Space Weather Forecasting Intern, Summer 2018

Compared behavior of solar prominences and coronal mass ejections to 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). Advisor: Dr. Barbara Thompson.

NASA GODDARD SPACE FLIGHT CENTER, SOLAR PHYSICS LAB
High School Research Intern, Fall 2016 - Summer 2017

Tested and analyzed results from new method for mapping motion of solar prominences. Converted code for analysis from IDL to Python. Advisor: Dr. Barbara Thompson.

PUBLICATIONS

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

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

PRESENTATIONS

Carnegie Astrophysics Summer Student Internship Poster Session, 2021
AAS Meeting Poster Sessions, Winter 2020, Winter 2021, Summer 2021
Caltech Summer Undergraduate Research Fellowship Seminar Day, 2019, 2020
NASA Goddard Summer Intern Poster Sessions, 2018, 2017

AWARDS

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 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