

# Vera Berger

Kavli Institute for Astrophysics and Space Research  
Massachusetts Institute of Technology  
70 Vassar St  
Cambridge, MA 02139

✉ vlberger@mit.edu | 🌐 website | 📧 veraberger

## EDUCATION

---

<b>Massachusetts Institute of Technology (MIT)</b> Ph.D. Student in Physics	2024 -
<b>University of Cambridge</b> M.Phil. in Scientific Computing <i>Thesis:</i> Magnetohydrodynamic simulations of magnetic reconnection	2023 - 2024
<b>Pomona College</b> B.A. in Mathematics, Physics <i>Physics thesis:</i> Line-dominated emission and temperature distribution of flares on low-mass stars <i>Mathematics thesis:</i> Searching for stellar similarity: empirical models for stellar flares in the ultraviolet	2019 - 2023

## RESEARCH EXPERIENCE

---

<b>University of Cambridge, Graduate Researcher</b> Developed scalable fluid codes with higher-order hyperbolic solvers and adaptive mesh refinement Implemented two-fluid physics in astrophysical MHD code with C++ <i>Advisors:</i> Dr. Stephen Millmore, Dr. Philip Blakely	01/2024 - 08/2024
<b>University of Hawai'i at Mānoa, NSF REU</b> Constrained flare temperatures, energies and morphologies to study impact of UV radiation on orbiting planets Developed anomaly detection algorithm to identify stellar flares in time-series data for 400,000 nearby stars <i>Advisors:</i> Prof. Benjamin Shappee, Dr. Michael Tucker, Jason Hinkle	05/2022 - 08/2024
<b>NASA Goddard Space Flight Center, OSTEM Intern</b> Developed a convolutional neural network for stellar flare identification in the highest-cadence TESS data <i>Advisors:</i> Dr. Christina Hedges, Dr. Nicole Schanche	06/2023 - 06/2024
<b>Pomona College, Undergraduate Researcher</b> Discovered largest known minimal fibre in a Boolean lattice Characterized fibres, cutsets, and antichains in partially ordered sets <i>Advisor:</i> Prof. Shahriar Shahriari	03/2020 - 12/2022
<b>Carnegie Observatories, CASSI Intern</b> Characterized star formation activity and chemical enrichment of 45 dim hosts of supernovae from ASAS-SN <i>Advisor:</i> Dr. Thomas Holoien	05/2021 - 08/2021

## HONORS & AWARDS

---

<b>Fellowships</b>	
NSF Graduate Research Fellowship (\$159,000)	2024-2029
MIT Dean of Science Fellowship (~\$160,000), <i>1 of 20 incoming students at MIT</i>	2024-2027
Churchill Scholarship (\$70,000), <i>1 of 16 nationally, fully funded MPhil in STEM at Cambridge</i>	2023-2024
NSF Graduate Research Fellowship (declined for Churchill)	2023
NSF REU, University of Hawai'i at Manoa	2022

## Awards

Frank Parkhurst Brackett, Jr., and Davida Wark Brackett Prize, Pomona College, <i>outstanding astro. thesis</i>	2023
Bruce Jay Levy Prize, Pomona College, <i>outstanding senior in mathematics</i>	2023
Senior Service Award, Pomona College, <i>for significant contributions to the College and its programs</i>	2023
Moncrieff Astronomy Award, Pomona College, <i>top student in first-year astronomy</i>	2021
National Merit Scholarship	2019

## Grants

Cool Stars 22 Conference Grant (\$540)	2024
Special Research Grant, Winston Churchill Foundation (\$3,300)	2024
Co-Curricular Conference Grant, Pomona College (\$350)	2023
Conference Grant, Associated Students of Pomona College (\$150)	2023
President's Sustainability Grant, Pomona College (\$4,400)	2020

## PUBLICATIONS

---

“Temporal Morphology of Stellar Flares in the Near- and Far-Ultraviolet”

**Berger, V. L.**, Hinkle, J., Shappee, B., et al., 2024, *in preparation*.

“A Large Minimal Fibre in  $2^{[n]}$ .”

**Berger, V. L.**, Grisanti, E., Hua, K., Shahriari, S., Walters, K., 2022, *in preparation*.

“Stellar Flares Are Far-Ultraviolet Luminous”

**Berger, V. L.**, Hinkle, J., Tucker, M., Shappee, B., et al., 2024, *MNRAS*, **532**, 4.

“Examining the Properties of Low-Luminosity Hosts of Type Ia Supernovae from ASAS-SN”

Holoien, T. W. -S., **Berger, V. L.**, et al., 2023, *ApJ*, **950**, 108.

## PRESENTATIONS

---

### Talks \* Invited

\*NASA GSFC Exoplanet Seminar Series, July 25, 2024

22nd Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, June 27, 2024

University of Cambridge Centre for Scientific Computing Seminar, May 15, 2024

\*University of Hawaii Astro-ph Journal Club, January 11, 2024

Summer Symposium, NASA Goddard Astrophysics Science Division, August 8, 2023

NASA GSFC Exoplanets and Stellar Astrophysics Laboratory Meeting, August 4, 2023

IfA REU, University of Hawai'i at Mānoa, July 28, 2022

Carnegie Summer Student Research Symposium, August 20, 2021

### Posters

University of Cambridge Centre for Scientific Computing Research Symposium, August 9, 2024

241st Meeting of the American Astronomical Society, January 10, 2023

SURE Undergraduate Research Symposium, University of Hawai'i at Mānoa, July 29, 2022

240th Meeting of the American Astronomical Society, June 9, 2022

Intensive Summer Research Symposium, Pomona College, September 15, 2021

## TEACHING AND OUTREACH

---

Mentor, MIT Physics Graduate Application Assistance Program	11/2024 -
Mentor, MIT Womxn in Physics Mentorship Program	10/2024 -
Peer Mentor, Carnegie Astrophysics Student Summer Program	Summer 2023, 2024
Member, APS Inclusion, Diversity, and Equity Alliance, Pomona College	01/2023 - 05/2023
Liaison, Pomona College Department of Mathematics & Statistics	08/2022 - 05/2023
TA, Advanced Introductory Astronomy, Pomona College	Spring 2022
Congressional Visits Day Representative, American Astronomical Society	05/2022
TA, Galaxies and Cosmology, Pomona College	Spring 2021

TA, Real Analysis I, Pomona College	Spring 2021
TA, Honors Calculus II, Pomona College	Fall 2020
TA, 1-2-1 Math Bridge Program, Pomona College	Summer 2020, 2021

### LEADERSHIP EXPERIENCE

Student Body President, Pomona College	05/2022 - 05/2023
Vice Chair, Board of Trustees Student Affairs Committee, Pomona College	05/2022 - 05/2023
Chair, Judicial Council, Pomona College	05/2021 - 05/2022
Voting Member, Board of Trustees Educational Quality Committee, Pomona College	08/2021 - 05/2022
Commissioner of Facilities and Environment, Associated Students of Pomona College	08/2020 - 05/2021
Sponsor, Housing & Residence Life, Pomona College	08/2020 - 05/2021
Mentor, Queer and Questioning Mentorship Program, Claremont Colleges	08/2020 - 05/2021

Last updated: December, 2024