

Pooneh Zehtabfard

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EDUCATION

Yale University

September 2026 - Present

PhD, Earth and Planetary Science

Advisor: Damanveer Grewal

University of California, Berkeley

August 2022 - May 2026

B.A., with Honors in Planetary Science, Applied Mathematics - Geodynamics Concentration

Thesis: Convection in Enceladus' Ice Shell Produced by Tiger Stripe Fissures (advisor: Michael Manga)

Minor: Music

TEACHING EXPERIENCE

University of California, Berkeley

Earth and Planetary Science Department

May 2025 - Math 2026

- EPS 20: Earthquakes in Your Backyard (Summer 2025, Spring 2026)
- EPS 7: Introduction to Climate Change (Fall 2025)

Mathematics Department

August 2024 - May 2026

- Math 185: Introduction to Complex Analysis (Spring 2026)
- Math 121A: Mathematical Tools for the Physical Sciences (Fall 2025)
- Math 104: Introduction to Real Analysis (Fall 2024, Spring 2025)

RESEARCH EXPERIENCE

University of California, Berkeley and University of California, Davis

Undergraduate Researcher, Earth and Planetary Science Department

May 2024 – May 2026

- Simulated convection within Enceladus' ice shell with temperature dependent-viscosity using ASPECT (Advanced Solver for Planetary Evolution, Convection, and Tectonics) by creating 2D rectangular models of regions of ice across the satellite
- Tested the impact of varying ice shell thicknesses and reference background viscosities on convective patterns, heat flux, and ice velocity
- Calculated mathematical analyses of heat flow and convection using the Nusselt and Rayleigh numbers, respectively, to derive scaling relationships

University of California, San Diego, Scripps Institution of Oceanography

Undergraduate Researcher, Institute of Geophysics and Planetary Physics

June 2025 – August 2025

- Modeled convection in Venus' Mantle and investigated the effects of mantle plumes and droplets on the coexistence of coronae and large volcanic rises using ASPECT
- Implemented depth-dependent activation enthalpy and mineral composition profiles to existing models, drawing comparisons to existing constant activation enthalpy profiles
- Created 2D annulus models with varying reference temperatures to investigate effect on convection and to draw comparisons between Venus and Earth's mantles.

University of California, Berkeley

Undergraduate Researcher, Mathematics Department

Sept 2022 - May 2023

- Met weekly in a small undergraduate research/reading group to understand the Collatz Conjecture

- Formulated algorithms and adjusted code to interpret and identify patterns within selected categories of relevant numbers
- Created a database of tested numbers and identified patterns in order to create new classifications of numbers based on how they react to the Collatz function

CONFERENCE PRESENTATIONS

Zehtabfard, P., Kerr, M., Stegman, D. (2025), *Effects of Depth-Dependent Viscosity on the Coexistence of Coronae and Large Topographic Rises on Venus*, Presented at the Summer Research Conference at University of California, San Diego, CA; Oral Presentation

Zehtabfard, P., Rudolph, M., Manga, M.. (2025), *Convection in Enceladus' Ice Shell Produced by Tiger Stripe Fissures*, Presented at the Lunar and Planetary Science Conference (LPSC), The Woodlands, TX; Poster Presentation

Zehtabfard, P., Rudolph, M., Manga, M. (2025), *Convection in Enceladus' Ice Shell Produced by Tiger Stripe Fissures*, Presented at the Koret UC LEADS Research & Leadership Symposium, University of California, Los Angeles; Poster Presentation

GRANTS & FELLOWSHIPS

Bateman Prize, Yale University	2026
University of California Leadership Excellence Through Advanced Degrees Fellowship	2024
ASUC Academic Opportunity Fund Grant - For LPSC Attendance	2025

LEADERSHIP & OUTREACH

Gender Equity in Mathematics President May 2025 - May 2026

- Oversaw all GEM club proceedings by managing meetings and events, organizing outreach programs, expanding activities and member involvement, and upholding the values of accessibility, inclusivity, and belonging that the organization embodies

Mathematics Department Peer Advisor Sept 2024 - May 2026

- Held weekly office hours for students interested in majoring in mathematics to assist in navigating the major, finding math-related research opportunities, and career planning

Mathematics and Physical Sciences Scholars (MPS) Advisory Board Member Aug 2024 - May 2026

- Met monthly to plan MPS events, discuss improvements to mentorship programs, and develop identity group meetings for students studying Mathematics, Physics, Astronomy, or Earth and Planetary Science

Berkeley Math Tournament Volunteer Mar 2024 - April 2026

- Assisted in writing problems, proctoring exams, and grading student work for the Berkeley-hosted high school and middle school math tournaments that promote involvement in higher mathematics

Gender Equity in Mathematics Event Planning Chair Aug 2024 - May 2025

- Planned weekly meetings and outreach events centered around creating accessible and welcoming spaces for gender minorities interested in the mathematical sciences