Ian Pamerleau

724-594-6975 ipamerle@purdue.edu

Education:

Purdue University:
Ph.D. in Planetary Science 2021 – **Present**

University of Pittsburgh:
Bachelor of Science in Geology and Mathematics (2021)
- Cumulative GPA: 3.668
- Geology Major GPA: 3.94
- Mathematics Major GPA: 3.53

Research:

Viscous Relaxation as a Method for Constraining Crustal Ice Content on Ceres
Testing if Ceres' crust is ice-rich with a newly discovered rheology of ice with >6% rock content by modeling craters using finite element method modeling.
- Advisor: Professor Michael Sori, Department of Earth, Atmospheric, and Planetary Sciences, Purdue University
- August 2021 – **Present**
- Collaborators: Jet Propulsion Laboratory

Automated Delineation of River Flats Using Localized River Hypsometry
The local hypsometric curves of river systems have a characteristic shape that can be used to locate likely flats elevations. We use this method and gridded topographic data to create an algorithm that automatically maps flats along rivers.
- Advisor: Professor Eitan Shelef, Department of Geology and Environmental Science, University of Pittsburgh
- Jan 2020 – Aug 2021
- Collaborators: Los Alamos National Laboratories

Conjugate Wave Flow Analysis
Analytical study of traveling waves propagating through a two-layer fluid to find conditions which conserve mass, momentum, and energy.
- Advisor: Professor Ming Chen, Department of Mathematics, University of Pittsburgh
- Mar 2019 – Dec 2019

Publications:

Pamerleau, I. F., Sori, M. M., Scully, J. E. C. (2024), An ancient and impure frozen ocean on Ceres implied by its ice-rich crust, *Nature Astronomy*, in press.

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Awards & Honors:

Graduate Student EXPO Award Outstanding Poster (April 2024)
Presented to the top two students giving poster presentations during the graduate student recruiting expo weekend at the Dept. of Earth, Atmospheric, and Planetary Science at Purdue.

NSF Graduate Research Fellowship Program Honorable Mention (April 2022)
Awarded to outstanding graduate students in NSF-supported STEM disciplines who are pursuing research-based master's and doctoral degrees.

Donald W. Levandowski Memorial Scholarship in Geology (April 2022)
Awarded to first-year Purdue graduate student who is pursuing research in surface mapping, remote sensing, field mapping, or applied geology.

Ross Fellowship (2021-2022)
Designed for the recruitment of outstanding PhD-track students to graduate programs at Purdue. Provides four years of funding including an RA for the first year.

2021 Norman K. and Margaret Flint Memorial Field Geology Award (Spring 2021)
Awarded by University of Pittsburgh Department of Geology and Environmental Science at the University of Pittsburgh. Given to select students to aid in paying for geologic field camp.

Brackenridge Research Fellowship (Summer 2020)
Awarded by the University of Pittsburgh Honors College to allow independent research of an undergraduate with a strong academic record and interdisciplinary research plan. Biweekly seminars.

Samuel B. Frazier Student Resource Fund (2020)
Awarded by the Department of Geology & Environmental Science at the University of Pittsburgh. Given to select students in the department to aid in the purchase of textbooks.

NASA Pennsylvania Space Grant Consortium Scholarship (Summer & Fall 2019)
Awarded to encourage undergraduate students to enter STEM fields by promoting research connected to physics or astronomy. Required attendance of Duquesne University Research Ethics Forum and presentation at Duquesne University Undergraduate Research Symposium.

Presentations:

Lunar Planetary Science Conference 2024
- 'Asymmetric Relaxation of Large Craters in an Ice-Rich Crust are Consistent with Dawn Observations of Ceres'
- Poster, 12th March 2024

Lunar Planetary Science Conference 2023
- 'An ice-rich crust with unrelaxed craters on Ceres reflects an ancient frozen ocean'
- Oral Presentation, 16th March 2023

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Lunar Planetary Science Conference 2023
- 'Convection in Callisto's Ice Shell: Implications for Differentiation'
- Poster, 16th March 2023

Lunar Planetary Science Conference 2022
- 'Insolation-Driven Topographic Evolution on Ceres'
- Poster, 8th March 2022

American Geophysical Union Fall Meeting
- 'Automated Mapping of Arctic Floodplains to Improve Estimates of Sediment and Carbon Fluxes'
- Poster, 14th December 2020

Teaching Experience:

Guest Lecturer, Earth and Planetary Geophysics (EAPS 354), Purdue University
Taught two weeks of an undergraduate level geophysics course covering topics on gravity, topography, and seismology.
- Feb. 2023

Math Assistance Center Tutor, University of Pittsburgh
Tutored University of Pittsburgh students part time in mathematics by appointment through the Math Assistance Center, a free service to all University of Pittsburgh students.
- Courses Tutored: all Algebras & Pre-Calculus, Calculus, Linear Algebra, ODEs, & Analysis
- Aug. 2020 – April 2021

Leadership Experience:

Society of Physics Students (University of Pittsburgh Chapter)
Academic club at the University of Pittsburgh. Provides a space for students to participate in physics related activities with other likeminded students. Has weekly meetings and attends various events as available.
- Spring 2018: Secretary
- Summer 2018 – Spring 2020: Business Manager
-Spring 2020 – Spring 2021: President

Pittsburgh Fencing Association
Competitive sport club at the University of Pittsburgh. Welcomes all skill levels and teaches beginners. Has 4 practices a week; has scrimmages with other clubs monthly; attends national conference once a year; and goes to other regional tournaments as available.
- Summer 2018 – Spring 2019: President

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Pitt Jazz Ensemble
Musical performance (primarily Big Band Jazz) club at the University of Pittsburgh. Has rehearsals twice a week and 3-5 performances a semester.
- Summer 2018 – Spring 2021: President

Purdue Graduate Student Association
- Summer 2021 – Spring 2022: Secretary
- Administrator for Planetary Specific Colloquium (Crater Café) Summer 2022 – 2023
- Summer 2023 – Spring 2024: Treasurer
- **Present**: President

Skills:

COMSOL (Structural Mechanics & Nonlinear Materials)
JMARS & GIS
MATLAB (Topotoolbox, Mapping Toolbox)

References:

Professor Michael Sori
Purdue University, Department of Earth, Atmospheric, and Planetary Sciences
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Professor Brandon Johnson
Purdue University, Department of Earth, Atmospheric, and Planetary Sciences; Department of Physics and Astronomy
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Professor Eitan Shelef
University of Pittsburgh, Department of Geology and Environmental Science
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