

Cole Meyer

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EDUCATION

University of Arizona, Tucson, AZ

Ph.D. in Planetary Sciences, Minor in Optical Sciences (Thesis Advisor: Walter Harris)

Expected 2030

M.S. (en route) in Planetary Sciences

Expected 2027

Princeton University, Princeton, NJ

A.B., Honors in Astrophysical Sciences with Service Focus

May 2024

RESEARCH EXPERIENCE

Harris Group, University of Arizona, Tucson, AZ

Research Assistant; Advisors: Prof. Walt Harris, Dr. Jason Corliss

Fall 2024 – present

- Lead graduate student for Spatial Heterodyne Interferometric Molecular Cloud Observer (SHIMCO) sounding rocket mission, actively contributing to target selection, spectral modeling, signal-to-noise estimation, data transmission, and data reduction efforts.
- Currently drafting initial SHIMCO paper which tentatively emphasizes target selection and spectral modeling efforts.

de Kleer Group, Caltech, Pasadena, CA

Research Assistant; Advisors: Prof. Katherine de Kleer, Maria Camarca

Summer 2024

Senior Thesis; Advisors: Prof. Katherine de Kleer, Prof. Chris Chyba, Maria Camarca

Fall 2023 – Spring 2024

Summer Undergraduate Research Fellowship; Advisors: Prof. Katherine de Kleer, Dr. Xander Thelen, Maria Camarca

Summer 2023

- Searched ALMA archive data to identify nine calibration observations and generate high-resolution mm and sub-mm images of Callisto.
- Independently developed method to set flux scale and recover disk-integrated brightness temperature of flux density calibrator objects.
- Generated thermophysical models of Callisto using scripts developed by the de Kleer Group and compared features in constructed thermal images with models to infer global and local thermophysical properties.

Page Group, Princeton University, Princeton, NJ

Junior Paper; Advisor: Dr. Lyman Page Jr.

Spring 2023

- Employed techniques from Fourier analysis and general relativity to develop consistent mathematical basis on which to compare quadratic, maximum likelihood, and cross-only quadratic CMB lensing power spectrum estimation methods.
- Generated lensed CMB temperature maps using CAMB via NASA's LAMBDA web interface and recovered CMB lensing power spectrum using quadratic estimator to demonstrate practicality of estimation techniques.

Space Physics Group, Princeton University, Princeton, NJ

Junior Paper; Advisors: Dr. Dave McComas, Dr. Riddhi Bandyopadhyay

Fall 2022

- Extended proton and electron heating rate estimates to near-Sun environment (0.06-0.25 AU) using new data from Parker Solar Probe (PSP) alongside internal energy conservation equations to unveil increasing proton-to-electron heating ratio at small heliocentric distances.
- Submitted manuscript for publication in *The Astrophysical Journal Letters* and presented work at Princeton Research Day.

Undergraduate Summer Research Program; Advisors: Dr. Dave McComas, Dr. Jamie Rankin

Summer 2022

- Proposed and developed non-invasive, automated inspection system to use digital microscope and novel MATLAB analysis software for evaluating flight-readiness of attenuation grid and carbon foil candidates for NASA Solar Wind and Pickup Ion (SWAPI) instrument.

ALMA Observatory, Santiago, Chile

Princeton International Internship Program; Advisors: Dr. Ed Fomalont, Dr. Bill Dent

Summer 2021

- Organized a three-month observation period to investigate an unexpected positional offset drift affecting the array for over a decade and determine that temperature unexpectedly affected the array's calibration pipeline, leading to a direct improvement in the quality of data.
- Presented results to over thirty ALMA and NRAO astronomers via PowerPoint.

LEADERSHIP EXPERIENCE AND OUTREACH

Other Worlds Initiative

Co-Founder, Co-Director

March 2025 – present

- Developed and co-authored a detailed proposal for an interdisciplinary astrobiology-focused STEM outreach program aimed at reducing recidivism among incarcerated youth in Pima County, AZ, in collaboration with UA Sky School.

University of Arizona Sky School

Graduate Instructor

February 2025 – present

AST205: Planets in the Universe

Observation Assistant

September 2023 – January 2024

- Oversaw distribution of 10 telescopes and 10 cameras for observing and astrophotography for over 85 students. Led numerous observing sessions and taught students to use equipment and identify key astronomical objects.

Princeton Undergraduate Research Journal

Founder, Co-Editor-in-Chief

January 2023 – January 2024

- Fundraised over \$6,500 from various campus departments to revive previously inactive undergraduate research journal.
- Selected and led over 45 students and 50 faculty members to collect 50 article submissions, perform multiple rounds of peer review and selection, and identify top four articles for publication for [Spring 2023](#) and [Fall 2023](#) issues.

Princeton Astronomy Club

Founder, Special Projects Chair

January 2023 – January 2024

- Obtained funding for two amateur club telescopes to be used for STEM outreach and education. Taught two hour-long workshops on “Telescopes and Observing” to twenty Princeton undergraduates and developed telescope certification program.

Founder, President

December 2021 – January 2023

- Presented funding proposals to student government, collaborated with professors and various departments to coordinate dome telescope operation, and promoted club events via designing, printing, and distributing flyers, buttons, and stickers to the student body.

Princeton University

Residential College Advisor

August 2022 – May 2024

- Ensured safe, inclusive, and engaging community for all residential college students by fostering community, encouraging holistic personal development, and promoting safety, citizenship, and health and wellness. Advised 9 upperclassmen and 28 first-year students.

AstroTech Summer School, UC Berkeley, Berkeley, CA

Participant

Summer 2023

- Designed, prototyped, built, and tested low-resolution spectrograph capable of observing Io’s sodium doublet throughout Jovian eclipse to study its sodium jet feature and auroral response to eclipse alongside four graduate students.
- Developed science objectives, development plan, and objective test plan to emulate real-world instrument development.
- Discussed and practiced developing collaborative, inclusive, and efficient teams within the astronomy community.

SELECTED PRESENTATIONS

Meyer, C. M. (2024). *Revealing Callisto’s Near Subsurface Thermophysical Properties with ALMA Calibrator Data*. AAS DPS 2024, Boise, ID, United States.

Meyer, C. M. (2024). *Thermal Imagery of Callisto using ALMA Calibrator Data*. Lunar and Planetary Laboratory Conference 2024, Tucson, AZ, United States.

Meyer, C. M. (2024). *Dumpster Diving: Thermal Imagery of Callisto Using ALMA Calibrator Data*. Princeton Research Day, Princeton, NJ, United States. <https://tinyurl.com/mu4zasr7>.

Meyer, C. M. (2024). *Thermal Imagery of Callisto using ALMA Calibrator Data*. 243rd American Astronomical Society Meeting, New Orleans, LA, United States.

Meyer, C. M., Camarca, M., Thelen, A. E., de Kleer, K. (2023). *Thermal Imagery of Callisto from ALMA Calibrator Data*. Caltech Summer Undergraduate Research Fellowship (SURF) Symposium, Pasadena, CA, United States.

Meyer, C. M., Li, J., Klangboonkrong, K., Abeynayake, S., Pujary, V. (2023). *OBserving Sodium Doublet in Io’s Aurorae (OBSiDIAn)*. AstroTech Spectrograph Symposium, Berkeley, CA, United States.

Meyer, C. M. (2023). *Estimates of heating rates in the near-Sun environment*. Princeton Research Day, Princeton, NJ, United States. <https://tinyurl.com/3p9r45mk>.

Meyer, C. M. (2022). *Automating inspection of attenuation grids and carbon foils*. Princeton Undergraduate Summer Research Program (USRP) Symposium, Princeton, NJ, United States. <https://tinyurl.com/29xaf76n>.

Meyer, C. M. (2021). *Investigating the nature of antenna position offset drift*. ALMA Observatory Final Presentations.

ACADEMIC AWARDS AND FELLOWSHIPS

NSF Graduate Research Fellow (2024-present)

Service Focus Fellow (2021-2022)

Arizona/NASA Space Grant Fellowship (2025-present)

Service Leadership Fellow (2020)

LPLC Best Graduate Student Talk (2024)

Arete Fellow (2020, 2021)

Outstanding Presentation Award, Princeton Univ. (2023, 2024)

PUBLICATIONS

Meyer, C. M., et al. (2025). Spatial Heterodyne Interferometric Molecular Cloud Observer (SHIMCO) I. Target Selection and Modeling. *In prep.*

Meyer, C. M., et al. (2025). Revealing Callisto’s Near Subsurface Thermophysical Properties with ALMA Calibration Data. *In prep.*

Camarca, M., de Kleer, K., Butler, B., Thelen, A., Meyer, C. M., et al. (2024). A Multi-Frequency Global View of Callisto’s Thermal Properties from ALMA. *Submitted*.

Bandyopadhyay, R., Meyer, C. M., et al. (2023). Estimates of proton and electron heating rates extended to the near-Sun environment. *The Astrophysical Journal Letters*, 955(2), L28. <https://doi.org/10.3847/2041-8213/act85e>

ADVISING

Hayden Marchinek (AZ/NASA Space Grant; 2024–present)

Heerok Das (AZ/NASA Space Grant; 2024–present)

Jasmine Martinez Castillo (AZ/NASA Space Grant 2024–present)