

**Name:** Thea McKenna (she/her)

**Code:** 698

**Home institution:** Southeastern Universities Research Association

**Name of task:** Lunar & Planetary Shape from Shading

**Role in task/ what they do for CRESST:**

I am a post-baccalaureate research assistant at NASA Goddard working to create high resolution digital elevation models (DEMs) of the lunar south pole in support of upcoming

Lunar exploration missions. I am using imagery and altimetry datasets from the Lunar Reconnaissance Orbiter (LRO) in tandem with the Ames Stereo Pipeline Shape-from-Shading technique to iteratively improve upon the resolution of current DEMs in this region. The enhanced resolution will be useful for future landing site selection, mission traverse planning, and advanced geomorphological studies. I am excited to learn more about the Moon, photogrammetry techniques, and how to support ongoing mission science while improving my programming and data processing skills.



**Background/ Autobiography?**

I got my Bachelors in Astronomy from Cornell University in May 2023, and graduated *magna cum laude*. I spent most of my undergrad working on various exoplanet research projects and didn't become interested in Solar System science until I did an internship at the Lunar and Planetary Institute in 2022. I am excited to gain more experience in planetary science while working at NASA! I will be continuing my education in fall 2024 at the University of Arizona Lunar and Planetary Laboratory for a PhD in Planetary Science.

**Favorite part of being a CRESST Scientist?**

My favorite part is experiencing what it's like to be a full-time scientist! I also really enjoy learning from and collaborating with the experienced scientists at NASA. It's an inspirational environment.

**Highlight of research as a CRESST Scientist?**

A highlight of my research here has been that I got to present my research at the 2024 Lunar and Planetary Science Conference. I presented a poster and got to explain my work to other scientists. It was cool to answer their questions and get feedback from experts in the field!

**List of publications, presentations, conferences they have spoken at etc.**

Conferences (posters):

- 2022 Keck Science Meeting – *mirror*: A Python Package to Simulate the Reflected-Light Detection Capability of the Keck Planet Finder
- 2022 American Astronomical Society – *mirror*
- 2023 Lunar and Planetary Science Conference – An Initial Analysis of Ganis Chasma, Venus

- 2024 Lunar and Planetary Science Conference – High Resolution Lunar Digital Elevation Models with Shape-from-Shading

Talks:

- 2022 Lunar and Planetary Institute Symposium, *An Initial Analysis of Ganis Chasma, Venus*

**List of awards won:**

Best Undergraduate Research Poster 2023, Cornell University Astronomy Department  
College of Arts & Sciences Extraordinary Senior '23, Cornell University

**Three fun facts:**

- I've done competitive swimming basically my whole life and competed as a Division I athlete in college
- I grew up in South Florida, and so only saw snow the first time while in college in New York
- Making art is my favorite hobby! I love experimenting with different art forms, including making jewelry, painting, drawing, sculpture, and ceramics