
SARAH STAMER

sstamer23.github.io ◇ sstamer@unm.edu

EDUCATION

University of New Mexico

Ph.D. Physics with Astrophysics Concentration

August 2024 - Present

M.Sc. Physics

August 2024 - Present

GPA: 3.85

University of Arizona

B.Sc. Astronomy (with Honors), B.Sc. Physics

August 2020 - May 2024

GPA: 3.785, Magna Cum Laude

Honors Thesis: *Analyzing Student Reasoning In Astrobiology MOOC Writing*

RESEARCH EXPERIENCE

New Mexico Space Grant Graduate Research Fellow

August 2025 - May 2026

Project: Using Machine Learning to Probe M-Dwarf and Exoplanet Elemental Abundances

Advisor: Dr. Diana Dragomir, University of New Mexico Department of Physics and Astronomy

- Receiving funding from a grant to the New Mexico Space Grant Consortium

Graduate Research Assistant

August 2024 - Present

Project: Analyzing JWST Observations of the Exoplanet LTT 9779b

Advisor: Dr. Diana Dragomir, University of New Mexico Department of Physics and Astronomy

- Leading the analysis of transmission spectrum data obtained using the NIRSpec instrument on JWST
- Using the Python code package [Eureka!](#) to go from a raw image file to a transmission spectrum plot
- Executing forward models and atmospheric retrievals using the Python code package [petitRADTRANS](#)

Research Assistant

June 2024 - August 2024

Project: Scalable Grading of Student Writing

Advisor: Dr. Chris Impey, University of Arizona Department of Astronomy/Steward Observatory

- Compared peer grades and feedback, instructor grades and feedback, and grades and feedback generated by GPT-3.5 and GPT-4
- Compiled feedback and scores for 120 student writing assignments in three Massive Open Online Courses (MOOCs)
- Created and implemented a method to code themes in the feedback for each of the courses' assignments

Undergraduate Research Assistant

January 2024 - August 2024

Project: Atmospheric Modeling of Post-Habitable Exoplanets with the Habitable Worlds Observatory

Advisor: Dr. Tyler Robinson, University of Arizona Lunar and Planetary Laboratory

- Utilized Venus and its atmosphere as an analog to explore post-habitable exoplanets and atmospheres
- Degraded model spectra based on Venusian spectra to simulate the spectra from an exoplanet mission
- Used the Python code package [rfast](#) to execute atmospheric retrievals with different complexities and spectral ranges

Honors Thesis Research

January 2023 - August 2024

Project: Analyzing Student Reasoning in Astrobiology Massive Open Online Course Writing

Advisor: Dr. Chris Impey, University of Arizona Department of Astronomy/Steward Observatory

- Examined student versus expert reasoning on a culminating assignment within an [Astrobiology MOOC](#)
- Characterized thousands of student writing assignments by the planet they selected and created a sub-sample for analysis
- Developed methods of coding and comparison to analyze hundreds of writing assignments to examine the content they include

Undergraduate Research Assistant June 2022 - May 2023

Project: Combating Science Misinformation Online

Advisor: Dr. Chris Impey, University of Arizona Department of Astronomy/Steward Observatory

- Classified 180 articles related to physics and 115 related to astrology as real or fake science
- Found and tagged 165 claim-evidence pairs within the physics articles
- Compiled datasets containing large amounts of real and fake scientific content, and utilized ChatGPT to generate short real and fake science writing samples

National Science Foundation Research Experience for Undergraduates May 2022 - July 2022

Project: Compositional Links Between Rocky Exoplanets and Their Host Stars

Advisor: Dr. Diana Dragomir, University of New Mexico Department of Physics and Astronomy

- One of 9 students and the only rising third-year student selected for the program from 149 applicants
- Used the Python code package [SPECIES](#) to obtain stellar elemental abundances directly from spectra
- Developed software to calculate stellar molar ratios, stellar compositional mass fractions, and exoplanetary compositional mass fractions (code on [Github](#))
- Compared compositional mass fractions numerically and graphically to examine trends (code on [Github](#))
- Presented research to department faculty and graduate students at a final poster session for the program

Arizona/NASA Space Grant Undergraduate Intern August 2021 - May 2022

Project: Addressing the Pandemic of Science Misinformation on the Internet

Advisor: Dr. Chris Impey, University of Arizona Department of Astronomy/Steward Observatory

- Selected as one of 29 STEM student interns from 152 applicants, received funding from a grant to the Arizona/NASA Space Grant Consortium
- Found and read papers on the Claim-Evidence-Reasoning Framework, and applied that knowledge while classifying 260 articles as real or fake science and while finding claim-evidence pairs within 110 of the real science articles
- De-identified and compiled 450 student writing assignments from a past general education astronomy course and utilized those assignments by finding and tagging claim-evidence pairs within the assignment content

Undergraduate Research Assistant January 2021 - May 2021

Projects: Combating Science Misinformation Online and Scalable Grading of Student Writing

Advisor: Dr. Chris Impey, University of Arizona Department of Astronomy/Steward Observatory

- Read and classified over 140 articles on various pseudoscience topics to add to a training set for a neural network
- Wrote example assignments and found papers on writing in science-related MOOCs to begin assessing student learning through writing assignments in an Astrobiology MOOC

HONORS & AWARDS

| | |
|---|--------------------------|
| New Mexico Space Grant Graduate Research Fellowship (\$10,000) | 2025 - 2026 |
| Evelyn O. Bychinsky Promising Astronomer Award (\$1,275) | 2023 - 2024 |
| Astronaut Scholarship (\$15,000) | 2023 |
| Inducted into Phi Beta Kappa, Alpha of Arizona Chapter | 2023 |
| Kenneth S. Krane Scholarship (\$3,600) | 2023 - 2024 |
| Galileo Circle Scholarship (\$1,000) | 2023 - 2024 |
| Goldwater Scholarship Nominee | 2023 |
| Glenn C. Purviance Scholarship (\$2,000/year) | 2022 - 2023, 2023 - 2024 |
| Bob and Sue Vaughan Galileo Circle Endowed Scholarship (\$2,500) | 2022 - 2023 |
| Arizona/NASA Space Grant Undergraduate Internship | 2021 - 2022 |
| William Scott and Elizabeth P. Jenkins Scholarship (\$1,350/year) | 2021 - 2022, 2023 - 2024 |

| | |
|---|---------------------------------------|
| Rev. Dr. Karen Layman Gift of Hope Scholarship (\$1,000/year) | 2020 - 2021, 2021 - 2022, 2022 - 2023 |
| Stamps Scholarship (\$30,000/year) | 2020 - 2024 |
| University of Arizona National Merit Scholar (\$18,000/year) | 2020 - 2024 |

TEACHING, SERVICE, & OUTREACH

| | |
|--|-----------------------|
| Graduate Teaching Assistant | August 2024 - Present |
| <ul style="list-style-type: none"> • Spring 2025: TA for two sections of ASTR 1115L with 60 total students enrolled, presentations here • Fall 2024: TA for a section of ASTR 1115L with 24 students enrolled, presentations here • ASTR 1115L (Introductory Astronomy Lab): Develop and deliver presentations to students to help them understand concepts in the week's lab, answer student questions during the lab, and grade labs and observing projects | |
| Physics and Astronomy Graduate Student Association (Panda GSA) | August 2024 - Present |
| 2025-2026 Academic Year: GSA Communications Officer and Secretary | |
| <ul style="list-style-type: none"> • Sending biweekly GSA event information and flyers through email and Discord to keep students updated • Taking meeting minutes during GSA cabinet meetings | |
| 2024-2025 Academic Year: GSA Web Technology Officer and Representative to UNM Graduate and Professional Student Association (GPSA) | |
| <ul style="list-style-type: none"> • Developed a list of resources for new and current grad students to utilize during their graduate career • Attended monthly GPSA meetings and reported back to the GSA cabinet on what was discussed • Planned and hosted biweekly socials, holiday parties, events in collaboration with other departments and GSAs, and a town hall for graduate students to voice their concerns about the department | |
| Women in Physics, Astronomy, and Optics (WiPAO) | August 2024 - Present |
| 2025: Chief of Communications and Web | |
| <ul style="list-style-type: none"> • Update Instagram, website, and Discord with event information, flyers, and resources for members • Planning and hosting biweekly social and educational events to build community among and support women and gender minorities in various STEM fields | |
| Volunteer Telescope Operator | August 2024 - Present |
| <ul style="list-style-type: none"> • Completed training on operation procedures for the 14" telescope at the UNM Campus Observatory • Working with other operators to find and show objects of interest in the night sky, providing the public and students in astronomy courses with information on these objects as they look through the telescope • Entertaining guests and answering their questions about astronomy as they wait in the telescope lines | |
| Astronaut Scholar Alumni Space Panel | May 2025 |
| <ul style="list-style-type: none"> • Invited to participate in a panel of Astronaut Scholars who are involved in astronomy and astrophysics during the U.S. Astronaut Hall of Fame Induction Weekend | |
| UNM Undergraduate Research Opportunity Conference Volunteer | April 2025 |
| <ul style="list-style-type: none"> • Evaluated oral presentations given by 8 STEM students for content, clarity, delivery, and engagement • Served as an evaluator for 2 presentations to keep the session on time and facilitate questions | |
| Outreach Talk at Space Center Houston | March 2025 |
| <ul style="list-style-type: none"> • Invited to share about my journey in STEM as part of the Women's History Month Speaker Series • Talk is entitled From Dark Skies to Distant Worlds: My Journey in Science | |
| Judge for the Rio Rancho Public Schools Student Research Expo | January 2025 |
| <ul style="list-style-type: none"> • Provided feedback to 13 high school student projects in math, computer science, astronomy, and physics | |
| UR Inspiration Volunteer Evaluator | October 2024 |
| <ul style="list-style-type: none"> • Provided feedback to 8 undergraduate students presenting their research at a multi-university conference | |
| Live Chat with Astronaut Mike Fossum Astronaut Scholar Moderator | August 2024 |

- Assisted with facilitating a talk and Q&A for 120 students to hear from a veteran NASA Astronaut
- Shared about my journey in science and as an Astronaut Scholar to inspire the students to pursue STEM

PUBLICATIONS

Impey, C., Wenger, M., Garuda, N., Golchin, S., and **Stamer, S.** (2025). [Using Large Language Models for Automated Grading of Student Writing about Science](#). *IJAIED*. arXiv: [2412.18719](#) [cs.CL].

SELECTED FIRST-AUTHOR PRESENTATIONS

[Exploring the Atmosphere of Desert-Dwelling LTT 9779b using JWST/NIRSpec](#) April 2025
Poster, Atmospheric Characterization of Rocky to Giant Exoplanets in Thermal Emission with JWST

[Analyzing Student Reasoning in Astrobiology MOOC Writing](#) April 2024
Poster, 2024 Franke Honors Pinnacle

[Characterizing Post-Habitable Exoplanets with Habitable Worlds Observatory](#) March 2024
Poster, 4th Annual Arizona Astrobiology Symposium

[Combating Fake Science Online](#) October 2023
Poster, 2023 Galileo Circle Scholar Celebration

[Combating Fake Science Online](#) August 2023
Contributed Talk, 2023 Astronaut Scholar Technical Conference

[Using Machine Learning to Detect Science Misinformation](#) January 2023
iPoster, 241st Meeting of the American Astronomical Society

[Super-Earths, Super-Mercuries, and Solar-Type Stars: Compositional Similarities Between Rocky Exoplanets and Their Host Stars](#) January 2023
Contributed Talk, 241st Meeting of the American Astronomical Society

[Super-Earths, Super-Mercuries, and Solar-Type Stars: Compositional Similarities Between Rocky Exoplanets and Their Host Stars](#) October 2022
Poster, 2022 Galileo Circle Scholar Celebration

[Addressing the Pandemic of Science Misinformation on the Internet](#) April 2022
Contributed Talk, 31st Annual Arizona/NASA Space Grant Statewide Symposium