
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 (non-thesis)

August 2024 - Present

University of Arizona

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

August 2020 - May 2024

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

RESEARCH EXPERIENCE

Graduate Research Assistant

August 2024 - Present

Project Title: Analyzing JWST Observations of the Exoplanet LTT 9779 b

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

- Leading transmission spectrum analysis using data from JWST/NIRSpec and the Python code package [Eureka!](#) to learn about the atmosphere of this hot Neptune exoplanet

Research Assistant

June 2024 - August 2024

Project Title: 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
- 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 Title: 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 Python code package [rfast](#) to execute atmospheric retrievals with different complexities and spectral ranges

Honors Thesis Research

January 2023 - August 2024

Project Title: 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 Massive Open Online Course](#)
- 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 Title: 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 Title: 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 selected for the program from 149 applicants nationwide
- 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

NASA Space Grant Intern

August 2021 - May 2022

Project Title: 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

Project Title: 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 Massive Open Online Courses (MOOCs) to begin assessing student learning through writing assignments in an Astrobiology MOOC

HONORS & AWARDS

Evelyn O. Bychinsky Promising Astronomer Award

2023 - 2024

Awarded for outstanding achievements and promise by undergraduate students

Astronaut Scholarship

2023

Awarded to 68 junior and senior STEM students from partner universities

Phi Beta Kappa, Alpha of Arizona Chapter

2023

Lifetime membership in prestigious honor society; selected for exceptional academic achievement, depth and breadth of studies, and leadership capacity

Kenneth S. Krane Scholarship

2023 - 2024

Awarded to junior and senior Physics undergraduates with a 3.5 GPA or higher

Galileo Circle Scholarship

2023 - 2024

Awarded to students within the College of Science for research and academics

Goldwater Scholarship Nominee

2023

One of four STEM juniors and seniors nominated from the University of Arizona

Glenn C. Purviance Scholarship

2022 - 2023, 2023 - 2024

Awarded as one of three outstanding juniors in Astronomy

Bob and Sue Vaughan Galileo Circle Endowed Scholarship

2022 - 2023

Awarded to students within the College of Science for research and academics

Arizona/NASA Space Grant Internship

2021-2022

Awarded funding for academic year research and statewide conference presentation

William Scott and Elizabeth P. Jenkins Scholarship

2021 - 2022, 2023 - 2024

Inaugural recipient, awarded for excellence in sharing astronomy with the public

Rev. Dr. Karen Layman Gift of Hope Scholarship

2020 - 2021, 2021 - 2022, 2022 - 2023

Awarded to recognize undergraduate students who are active leaders in the United Methodist Church	
Stamps Scholarship	2020 - 2024
Awarded a full-ride scholarship, part of Arizona's inaugural Stamps Scholar cohort	
University of Arizona National Merit Scholar	2020 - 2024
Awarded scholarship and automatic admission into the W.A. Franke Honors College	

TEACHING, SERVICE, & OUTREACH

Graduate Teaching Assistant	August 2024 - Present
University of New Mexico Department of Physics and Astronomy, Albuquerque, NM.	
<ul style="list-style-type: none"> • Fall 2024: TA for a section of the Introductory Astronomy Lab (ASTR 1115L) with 24 students enrolled • ASTR 1115L: Develop and deliver presentations to students to help them understand the concepts in the week's lab, answer student questions during the lab, and grade labs and projects in a timely manner • Spring 2025: TA for two sections of ASTR 1115L with 30 and 20 students enrolled, respectively 	
Physics and Astronomy Graduate Student Association (Panda GSA)	August 2024 - Present
University of New Mexico Department of Physics and Astronomy, Albuquerque, NM.	
2024-2025 Academic Year: GSA Web Technology Officer and Representative to 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 • Revamping the GSA website to make it organized, up to date, and helpful for prospective grad students • Attending monthly GPSA meetings and reporting back to the GSA cabinet on what was discussed • Planning and hosting 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 	
Volunteer Telescope Operator	August 2024 - Present
University of New Mexico, Albuquerque, NM.	
<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 telescope lines 	
Tucson Initiative for Minoritized Student Engagement in Science and Technology Program (TIMESTEP) Leader	September 2022 - May 2024
University of Arizona Department of Astronomy, Tucson, AZ.	
<ul style="list-style-type: none"> • Served as a peer mentor to fellow astronomy and physics undergraduates by facilitating a positive community that values diversity • Participated on six panels in meetings on navigating the first two years in the astrophysics majors, undergraduate research opportunities, presenting research, and reflections about my time as an undergraduate in astronomy and physics • Developed and co-led a workshop for second-year students in the TIMESTEP Research Apprenticeship program on creating a research poster • Planned the Astronomy Department's first annual Undergraduate Research Symposium in partnership with the University of Arizona Astronomy Club 	
NASA Partner Eclipse Ambassador	September 2022 - May 2024
Tucson, AZ.	
<ul style="list-style-type: none"> • Completed training on eclipse information and how to effectively share it with the public • Worked with an amateur astronomer partner to find events to participate in, and created deliverables and activities for these events that are engaging and scientifically accurate • Engaged with over 400 community members and visitors at the 2023 Tucson Festival of Books, with over 100 community members at the 2023 Tucson Astronomy Festival, and with over 200 community members at the 2024 Tucson Festival of Books 	
Volunteer Telescope Operator	September 2022 - February 2023
Flandrau Science Center and Planetarium, Tucson, AZ.	

- Completed training on how to operate the 16" telescope at the Flandrau Observatory by shadowing and assisting operators approximately two nights a month for five months
- Helped trainees gain familiarity with the telescope and night sky and make progress in their training by answering their questions and offering advice and assistance when needed
- Found and showed objects of interest in the night sky, like planets, deep-sky objects, and stars, providing the public with information on these objects as they look through the telescope

University of Arizona College of Science Ambassador

August 2022 - May 2024

University of Arizona, Tucson, AZ.

- Nominated by the Astronomy Department as one of their highly distinguished undergraduates in the major to assist with prospective student recruitment and community outreach
- Shared my story and answered questions in information sessions, assisted with large College of Science events, and provided tours to students and families interested in astrophysics
- Awarded the 2022-2023 VIP Visit/Chat Superstar award for hosting the most virtual video chats and in-person VIP Visits for prospective students and their families

Science Center Interpreter and Planetarium Operator

August 2021 - May 2024

Flandrau Science Center and Planetarium, Tucson, AZ.

- Trained for three months to become a planetarium operator by learning how to operate UniView software for different shows and shadowing other operators
- Presented planetarium shows weekly on a variety of science topics, ensuring they are unique, educational and accessible to the audience, and enjoyable
- Utilized science knowledge and knowledge of the exhibits to provide different experiences to guests to enrich their understanding and appreciation of science

PUBLICATIONS

Impey, C., Wenger, M., Garuda, N., Golchin, S., and **Stamer, S.** (2024). *Using Large Language Models for Automated Grading of Student Writing about Science*, IJAIED, in press. [arXiv:2412.18719 \[cs.CL\]](https://arxiv.org/abs/2412.18719).

PRESENTATIONS

Analyzing Student Reasoning in Astrobiology MOOC Writing April 2024

Poster, 2024 Franke Honors Pinnacle
Tucson, AZ

Characterizing Post-Habitable Exoplanets with Habitable Worlds Observatory March 2024

Poster, 4th Annual Arizona Astrobiology Symposium
Tempe, AZ

Combating Fake Science Online October 2023

Poster, 2023 Galileo Circle Scholar Celebration
Tucson, AZ

Combating Fake Science Online August 2023

Contributed Talk, 2023 Astronaut Scholar Technical Conference
Orlando, FL

Using Machine Learning to Detect Science Misinformation January 2023

iPoster, 241st Meeting of the American Astronomical Society
Seattle, WA

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
Seattle, WA

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
Tucson, AZ

Addressing the Pandemic of Science Misinformation on the Internet

April 2022

Contributed Talk, 31st Annual Arizona/NASA Space Grant Statewide Symposium
Tucson, AZ