SAMANTHA R. GILBERT-JANIZEK

samgilbertjanizek.neocities.org samroseg@uw.com (561)-951-2219

EDUCATION

University of Washington, WA *Sept. 2019 - Present*
Dual Title PhD in Astronomy & Astrobiology (exp. Summer 2026)
MS Astronomy

University of Chicago, IL *Oct. 2013 - June 2017*
BA Physics/Astrophysics Specialization, ***Awarded with Honors***

SKILLS

Languages: English, Spanish
Programming: Python, C, Fortran, MATLAB

SELECTED RESEARCH EXPERIENCE

University of Washington, Advisor: Prof. Rory Barnes *Sept. 2019 - Present*
Graduate Research Assistant
I am bridging the gap between interior and atmospheric evolution models to simulate *fully self-consistent planets* in anticipation of the launch of the Habitable Worlds Observatory (HWO) by extending the `VPLanet` software ecosystem. I have also studied the *impact of atmospheric modeling assumptions* on the interpretation of Earth-like exoplanet spectra under the Bayesian retrieval model `SMARTER`, as well as using the `rfast` model to determine the long wavelength cutoff requirements for identifying Earth-through-time biosignatures with HWO.

Stanford University, Prof. Laura Schaefer *Fall 2023*
Visiting Researcher
Studied the habitability of JWST targets of interest using geologic convection models. Wrote code to model systems of ordinary differential equations, investigating the effects of stagnant lid convection and crustal recycling on the stability of the atmosphere and surface liquid water for the inner rocky planets L-98-59 b and TOI-1685 b.

Lawrence Berkeley National Laboratory, Prof. Akito Kusaka *Aug. 2017 - Aug. 2018*
Post-Baccalaureate Research Assistant
Researched and successfully developed a cryogenic test-bed for the study of cosmic microwave background (CMB) anisotropies, which probe the early fluctuations leading to large-scale structure, with POLARBEAR-2. Developed motor control scripts for the POLARBEAR-2 cold half-wave plate.

PUBLICATIONS

Gilbert-Janizek, S. et al., *in prep.* "Resolution Requirements for Life Detection via Reflected Light Spectroscopy of Rocky Exoplanets."

Gilbert-Janizek, S. et al., *in prep.* "A One-Dimensional, Whole-Planet Model of the Abiotic Earth through Time."

Gilbert-Janizek, S. et al., 2024, *Planetary Science Journal*, "Retrieved Atmospheres and Inferred Surface Properties for Habitable Terrestrial Exoplanets Using Transmission and Direct Imaging."

Joshua Krissansen-Totton, Anna Grace Ulses, Maxwell Frissell, **Samantha Gilbert-Janizek**, Amber Young, Jacob Lustig-Yaeger, Tyler Robinson, Stephanie Olson, *in prep.*, "Wavelength Requirements for Life Defection via Reflected Light Spectroscopy of Rocky Exoplanets."

Giada Arney, Niki Parenteau, Natalie Hinkel, Eric Mamajek, Joshua Krissansen-Totton, Stephanie Olson, Edward Schwieterman, Sara Walker, Kevin Fogarty, Ravi Kopparapu, Jacob Lustig-Yaeger, Mark Moussa, Sukrit Ranjan, Garima Singh, Clara Sousa-Silva, Maxwell Frissell, **Samantha Gilbert-Janziek**, Vincent Kofman, Natasha Latouf, Mary Anne Limbach, Rhonda Morgan, Christopher Stark, Anna Grace Ulses, Nicholas Wogan, Mike Wong, Amber Young, "The Search for Life on Potentially Habitable Exoplanets." Living Worlds HWO Science Case Development Document. (2025).

Hobson-Ritz, Marshall, Jessica Birky, Leah Peterson, Peter Gwartney, Rachel Wong, John Delker, Tyler Gordon, **Samantha Gilbert-Janizek**, James RA Davenport, and Rory Barnes."Tidal Synchronization of TESS Eclipsing Binaries" arXiv preprint arXiv:2501.04082 (2025).

INVITED TALKS

"A Modeling Comparison of Retrieved Planetary Properties for Habitable Exoplanets Using Transmission and Direct Imaging".
NASA Goddard Space Flight Center Seminar, Nov. 2024
Carnegie Earth and Planets Laboratory Seminar, Nov. 2024
Carnegie Observatories Lunch Seminar, Oct. 2024
University of Washington - Bothell Physics Seminar, Virtual, Nov. 2023
Jet Propulsion Laboratory, Virtual, Apr. 2023

"Searching for Life on Exoplanets." Lawrence Berkeley National Laboratory, SULI/BLUR Internship Meeting, Virtual, Mar. 16, 2022.

CONTRIBUTED PRESENTATIONS

"Predicting Atmospheric and Surface Volatile Inventories of Abiotic Earths around HWO Target Stars." American Astronomical Society Conference 245, In Person, Jan 2025. Talk.

"Retrieved Atmospheres and Inferred Surface Properties for Habitable Terrestrial Exoplanets Using Transmission and Direct Imaging." American Astronomical Society Conference 241, In Person, Jan 2023. Talk.

"A Modeling Comparison of Retrieved Atmospheres and Inferred Surface Properties for Habitable Terrestrial Exoplanets Using Transmission and Direct Imaging." Astrobiology Science Conference, In Person, May 2022. Talk.

"How will we find and recognize life out there?" University of Washington Astrobiology Public Science Panel, Virtual, Jul. 28, 2021. Panelist.

"Developing a hierarchy of models for terrestrial habitability studies." TRAPPIST Habitable Atmosphere Intercomparison (THAI) Workshop, Virtual, Sept. 2020. Talk. *Video link available on website.*

SELECTED MENTORSHIP & OUTREACH

Raising e-STEAM *Feb. 2022 - Present*
Founder, Leader, Tutor
- Founded and lead the effort to mentor incarcerated youth at a medium to maximum security juvenile detention center.

- Organizing and leading 8 PhD students who provide weekly 1:1 tutoring.
- Volunteers develop hands-on Astrobiology lab activities and python coding camps for after-school and over the summer.
- Highlighted in the press by Popular Science and Astrobites

Zero Robotics *Sept. 2023 - Present*
Washington NASA Space Grant Fellow
- Recruiting the first Washington teams to participate in the 2024 Middle School Zero Robotics Competition
- Students develop code to control satellites on the ISS to perform a designated task.

Amelie Sharples and Ally Payne *Summer 2022-Summer 2023*
- Mentored undergraduates in implementing a nested sampling-based retrieval model to characterize theoretical steam atmospheres on TRAPPIST-1 c with JWST.
- Amelie won "Best Poster" (overall) at CUWiP in Ithaca, NY, Fall 2022.
- Ally is now a Post-Baccalaureate Researcher working with Dr. Geronima Villanueva on the Planetary Spectrum Generator at NASA Goddard Space Flight Center.

Leah Zuckerman *Summer 2019*
- Co-mentored undergraduate on implementing and debugging a 1D coupled photochemistry-climate model to simulate the hazy Titan atmosphere.
- Leah is now a PhD student in Astrophysics and Planetary Sciences at UC Boulder.

More Active Girls in Computing (MAGIC) *Jan. 2022 - Jan. 2023*
Mentor
- Mentored a high school girl interested in STEM careers by collaborating on a real astronomy research project: assessing our ability to discriminate between different types of terrestrial atmospheres on the inner TRAPPIST-1 planets using future emission spectroscopy measurements
- Program encourages girls from marginalized backgrounds to pursue careers in STEM by sparking an early interest in computing

Pre-Major in Astronomy Program (Pre-MAP) *Sept. 2021 - Jun. 2022*
Academic Advisor
- Mentored new UW undergraduate students in coding and the scientific method as they work on their first astronomy research projects
- Program encourages students from marginalized backgrounds to pursue the Astronomy major at UW and careers in STEM
-Developed lesson plans and workshops for teaching how to write and debug Python code and how to navigate academic mentoring relationships

GRANTS & AWARDS

Washington NASA Space Grant *Sep. 2022- Jun. 2025*
Awarded $28,000 over 3 years

2025 Zonta International Amelia Earhart Fellowship *Sep. 2025-May 2026*
Awarded $10,000
Won by up to 30 women per year **worldwide**