Curriculum Vitae

Isabela G. Huckabee

ihuckabe@asu.com

+1(571)-359-8293

Updated 5/22/2022

Education

August 2019—	**Degree:**	Bachelor of Science in Astrophysics, Minor in Physics
May 2023	**Where:**	Arizona State University, Tempe, AZ
	GPA:	3.97 of 4.0

Technical experience

Hardware

Breadboarding

Software

Python, Keras, Unix, Bash, Git, LaTeX, IDL, Arduino, MATLAB

Research

August 2020—
Present

Characterizing Atmospheres of T-dwarfs and Low-Gravity M-dwarfs

Arizona State University, Tempe, AZ

Advisor: Michael Line, Aishwarya Iyer

Contributions:

- Built self-consistent forward models in Python to extend the model capabilities into low surface gravities
- Created full grid of cloud-free T-dwarfs with T_{eff}, $\log(g)$, $\log(Z)$, $\log(Kzz)$, and C/O parameters
- Will integrate Gaussian processes to get a comprehensive account of error within models and data
- Will stress test the physical assumptions within the models through fittings with low resolution spectroscopy data

January 2020—
August 2021

Project SKYSURF

Arizona State University, Tempe, AZ

Advisor: Rogier Windhorst

Contributions:

- Built data reduction pipelines in contribution to Project SKYSURF, a Hubble archival legacy project to constrain all sky surface brightness and categorize it into components based on origin
- Wrote code to flag objects in large SKYSURF data sets
- Categorized large sets of images as usable or unusable for measuring sky brightness

May 2020—ation Belt	ULF Wave-driven Relativistic Electron Flux Oscillations in the Outer Radi-
August 2020	University of Colorado, Boulder, CO
	Advisor: Hong Zhao
	Contributions:

- Developed an algorithm in IDL to identify ultrarelativistic electron flux oscillations in data from the Van Allen Probes' Relativistic Electron-Proton Telescope
- Identified correlations between electron flux oscillation events and solar wind and geomagnetic parameters, confirming that electron flux oscillation events can be used as indicators of radial diffusion in the outer radiation belt
- Found that these oscillation events occur during times of both high and low solar wind pressure, suggesting substorms may trigger ULF waves

May 2021—August 2021	Stellar Spectral Line Fitting with Machine Learning Techniques
	University of Heidelberg - Landessternwarte, Germany
	Advisor: Siddhant Deshmukh, Hans-Günter Ludwig
	Contributions:

- Developed a linelist data creation pipeline in Python from scratch
- Created a convolutional neural network to detect the locations of lines and estimate their equivalent widths

May 2022—Present	Exoplanet Watch
	Jet Propulsion Laboratory - Pasadena, CA
	Advisor: Robert Zellem, Kyle Pearson
	Contributions:

- Will work with TESS data to constrain mid-transit times of known planets, look for variations indicative of other planets
- Will leverage TESS and citizen science data to monitor host star variability

Teaching

August 2020—Present	**Position:** Teaching Assistant
	Where: School of Earth and Space Exploration, Arizona State University

- Introduction to Astronomy - Taught astronomy labs for both majors and non-majors by independently giving lectures, facilitating labs, and grading assignments and papers
- Introduction to Galactic and Extragalactic Astrophysics - Graded homeworks and answered questions in class and office hours

July 2019— *Present*	**Position:** Private Tutor **Where:** Acakid Online

- Tutored students through an online whiteboard with drawing and digital note taking capabilities. digital note taking and drawing programs
- Specialized in physics, writing, entrance exam prep, and math topics ranging from geometry to calculus.

Outreach

April 2022— *Present*	**ASU Exoplanet Research Group**

- Created an exoplanet transit diorama with live-plotted light-curve using Python and Arduino for public demonstrations
- Explained exoplanet transits and transmission spectroscopy to the public at outreach events

August 2019— *Present*	**ASU Sundial Program**

- Represented ASU in the nationwide Access Network, which supports a more equitable and inclusive STEM community
- Organized a No-Jargon talk schedule for the Fall 2021 semester
- Mentored freshmen student and helped them with coding projects and adjustment to college life
- Ran geosystems demonstrations to educate the public about global warming at science outreach events

August 2019— *Present*	**ASU's Next Generation Service Corps**

- Led the Recycling and Emissions squad as part of ASU's New Generation Service Corp program
- Facilitated relevant science and business discussions in weekly squad meetings to prepare a spread in the program wide magazine

Publications

- Rogier A. Windhorst, Timothy Carleton, Rosalia O'Brien, Seth H. Cohen, Delondrae Carter, Rolf Jansen, Scott Tompkins, Richard G. Arendt, Sarah Caddy, Norman Grogin, Anton Koekemoer, John MacKenty, Stefano Casertano, Luke J. M. Davies, Simon P. Driver, Eli Dwek, Alexander Kashlinsky, Scott J. Kenyon, Nathan Miles, Nor Pirzkal, Aaron Robotham, Russell Ryan, Haley Abate, Hanga Andras-Letanovszky, Jessica Berkheimer, John Chambers, Connor Gelb, Zak Goisman, Daniel Henningsen, **Huckabee, Isabela**, Darby Kramer, Teerthal Patel, Rushabh Pawnikar, Ewan Pringle, Ci'mone Rogers, Steven Sherman, Andi Swirbul, and Kaitlin Webber. "SKYSURF: Constraints on Zodiacal Light and Extragalactic Background Light

through Panchromatic HST All-Sky Surface-Brightness Measurements: I. Survey Overview and Methods". In: *Submitted* (2022)

- Hong Zhao, Theodore E. Sarris, Xinlin Li, **Huckabee, Isabela** G., Daniel N. Baker, Allison J. Jaynes, and Shrikanth G. Kanekal. "Statistics of Multi-MeV Electron Drift-Periodic Flux Oscillations using Van Allen Probes Observations". In: *Geophysical Research Letters* 49 (2022), e2022GL097995

- Hong Zhao, Theodore E. Sarris, Xinlin Li, Max Weiner, **Huckabee, Isabela G.**, Daniel N. Baker, Allison J. Jaynes, Shrikanth G. Kanekal, Scot R. Elkington, Mohammad Barani, Weichao Tu, Wenlong Liu, Dianjun Zhang, and Michael D. Hartinger. "Van Allen Probes Observations of Multi-MeV Electron Drift-Periodic Flux Oscillations in Earth's Outer Radiation Belt During the March 2017 Event". In: *Journal of Geophysical Research: Space Physics* 126 (2021), e2021JA029284

Selected Presentations

- Isabela Huckabee, Aishwarya Iyer, and Michael Line. "Characterizing the atmospheres of cloud-free T-dwarfs using Gaussian processes". In: *2022 Arizona NASA Space Grant Consortium Symposium*. Apr. 2022. *Oral*

- Isabela Huckabee. "The Black Box of Machine Learning". In: *2022 Sundial No Jargon Conference*. Apr. 2022. *Oral*

- Isabela Huckabee and Siddhant Deshmukh. "Stellar Spectral Line Fitting with Machine Learning Techniques". In: *Virtual RISE Meeting 2021*. Aug. 2021. *Oral*

- Isabela Huckabee, Aishwarya Iyer, and Michael Line. "Characterizing the Atmospheres of Low Surface Gravity M-dwarfs". In: *2021 American Physical Society Conference for Undergraduate Women in Physics*. Jan. 2021. *Oral*

- Isabela Huckabee and Hong Zhao. "A Statistical Study on the ULF-Wave Driven Ultrarelativistic Electron Flux Oscillations in the Outer Radiation Belt". In: *2020 American Geophysical Union Fall Meeting*. Dec. 2020. *Poster*

Honors and awards

- Access Network Fellow (2021-Present)
- Goldwater Scholar (2021)
- DAAD RISE Scholar (2021)
- ASU/NASA Space Grant Scholar (2020-2022)
- Outstanding Presentation Award - Sundial No Jargon Conference (2020)
- New American University Scholar/President's Award (2019-Present)
- Public Service Academy Commitment Award (2019-Present)
- ASU College of Liberal Arts and Sciences Dean's List (2019-Present)