

Education

- 2023 - Present **Ph.D. in Astronomy**, *University of Hawai'i at Mānoa*, Honolulu, HI
2020 - 2022 **M.S. in Earth and Planetary Sciences**, *University of Hawai'i at Mānoa*, Honolulu, HI
2016 - 2020 **B.A. in Astronomy (Honors)**, *Vassar College*, Poughkeepsie, NY
B.A. in Cognitive Science, *Vassar College*, Poughkeepsie, NY

Research Experience

- Interests Low Mass Stars, Stellar Activity, Planet Formation and Evolution, Planetary Atmospheres
- Sep 2023 - Present **Dr. Fei Dai**, *Confirmation and Characterization of Ultra-Short-Period Planets*, Honolulu, HI
○ Using radial velocity measurements and light curves to assess the size, mass, and composition of Earth-like USP planets, and analysing their emission spectra to reveal tidal distortion and atmospheric circulation effects
- Jan 2023 - Sep 2023 **Dr. Michael Connelley & Dr. Christian Flores**, *699-1 Project: Measuring the magnetic fields of the coolest pre-main sequence stars using iSHELL*, Honolulu, HI
○ Derived stellar properties simultaneously with average magnetic field measurements of pre-main sequence M stars in BPMG using a MCMC framework, utilizing high resolution K-band spectra obtained with iSHELL at IRTF.
- Aug 2020 - Dec 2022 **Dr. Eric Gaidos**, *Master's Thesis: Revisiting the Membership, Multiplicity and Age of the Beta Pictoris Moving Group*, Honolulu, HI
○ Obtained, reduced, and analyzed IR data from Maunakea Observatories and other sources to study the rotation and activity of young M dwarf stars and the implications for the evolution of their planets; identified binaries in BPMG to assess age and membership.
- Aug 2021 - July 2022 **Dr. Sonal Jain**, *MAVEN IUVS Science Team*, Boulder, CO
○ Research Affiliate of the Mars Atmosphere and Volatile Evolution (MAVEN) Imaging UltraViolet Spectrograph (IUVS) Science Team at the Laboratory for Atmospheric and Space Physics; analyzed data from previous laboratory work with Dr. Joseph Ajello and prepared manuscripts for publication.
- Aug 2019 - Aug 2020 **Dr. Joseph Ajello**, *Laboratory Study of Planetary UV Emissions*, Boulder, CO
○ Analyzed laboratory UV emission spectra for application in planetary aeronomical modeling; laboratory operation; prepared manuscript for publication; data reduction, analysis, and quality assurance.
- May 2019 - Aug 2019 **Dr. Joseph Ajello & Dr. Charles Malone**, *NSF Research Experience for Undergraduates*, Boulder, CO
○ Operated and optimized laboratory vacuum chamber equipment, electron gun, and flight spare spectrographs (MAVEN IUVS, GOLD) to obtain electron impact-induced fluorescence spectra from common planetary gases; developed data reduction and visualization routines.

Teaching Experience

- Undergraduate Academic Intern (distinguished TA), Astronomy Department Aug 2019 - May 2020
- *ASTR 101: Solar System Science*
- *ASTR 105: Stars, Galaxies, and Cosmology*
- *ASTR 220: Stellar Astrophysics*
- *ASTR 230: Planetary and Space Science*
- *ASTR 240: Observational Astronomy*
- *ASTR 322: Galaxies*
- Academic Intern (distinguished TA), Cognitive Science Department Jan 2020 - May 2020
- *COGS 219: Research Methods in Cognitive Science*
- Laboratory Teaching Assistant, Chemistry Department Aug 2018 - Dec 2019
- *CHEM 108: General Chemistry I Lab*
- *CHEM 109: General Chemistry II Lab*
- *CHEM 244: Organic Chemistry I Lab*
- Laboratory Teaching Assistant, Physics Department Aug 2018 - May 2019
- *PHYS 113: Fundamentals of Physics I*
- *PHYS 114: Fundamentals of Physics II*

Awards, Scholarships, and Fellowships

- Graduate Graduate Division Achievement Scholarship (\$3K) Aug 2023
Graduate Student Organization Travel Grant (\$1.7K) May 2023
Institute for Astronomy Outreach Service Award (\$500) Jan 2023
Graduate Division Achievement Scholarship, UH Mānoa (\$3K) Aug 2022

	NASA Exoplanet Science Institute Sagan Summer Workshop Travel Award (\$1.5K)	Jul 2022
	National Science Foundation Graduate Research Fellowship (\$125K+)	Apr 2022 - Present
	UH Mānoa SOEST Fred Mason Bullard Fellowship (\$12K)	Aug 2020
Undergraduate	Austin Endowed Student Travel Grant, American Geophysical Union	Dec 2019
	Internship Grant Fund, Vassar College	Nov 2019
	Grace Hopper Celebration Research Scholarship, Computing Research Association	Oct 2019
	QuestBridge National College Match Finalist	Nov 2015

Volunteering, Outreach and other Experience

Graduate	Remote Fellow, IAU Office of Astronomy for Development	Jun 2023 - Present
	Mentor and Organizing Assistant, Mauna Kea Scholars	May 2022 - Present
	Mentor, HI-STAR (Hawai'i Student/Teacher Astronomy Research) Summer Camp	May 2021 - Present
	Mentor and Volunteer, Honua Scholars	Oct 2021 - Present
	Volunteer, Institute for Astronomy Outreach Events	Dec 2021 - Present
	- Voyager Charter School Science Day	Nov 2023
	- Campbell-Kapolei School Complex Stargazing	Nov 2023
	- Sustainable Coastlines Hawaii Kaimuki Cleanup Festival IfA Team Lead	Sep 2023
	- Welina Mānoa: First Day of School Kick-Off Event	Aug 2023
	- Hawai'i Positive Engagement Project Event	Jul 2023
	- Sustainable Coastlines Hawaii Island Wide Cleanup Event IfA Team Lead	Jun 2023
	- Mililani Uka Elementary School StarLab	May 2023
	- Mauna Kea Observatories AstroDay Hilo	May 2023
	- IfA Open House	Apr 2023
	- Mānoa Experience: University Preview Day	Apr 2023
	- Lana'i Cat Sanctuary Ohana Stargazing Event	Mar 2023
	- Makahiki Games & Stargazing Event	Jan 2023
	- Mauna Kea Observatories AstroDay Kona	Nov 2022
	- Hawai'i Geek Meet	Sep 2022
	- IfA Open House	Apr 2022
	- Welina Mānoa: First Day of School Kick-Off Event	Jan 2023
	- Girl Scouts of Hawai'i STEM Camp	Jun 2022
	- IfA Open House	Apr 2022
	- Radio Telescope Demonstration	Feb 2022
	- Makahiki Games & Stargazing Event	Dec 2021
	Alumna and Volunteer, QuestBridge Organization	Aug 2016 - Present
Undergraduate	Organizer, Night at the Observatory Events, Vassar College	Aug 2019 - Feb 2020
	Research and Coding Intern, Vassar Brothers Medical Center: The Heart Center	Aug 2018 - May 2019
	Middle School and College Prep Tutor, Vassar College Urban Education Initiative	Aug 2016 - May 2018

Academic Service

	Institute for Astronomy Representative, Graduate Student Organization	Aug 2023 - Present
	Merit Based Awards Reviewer, Graduate Student Organization	May 2023
	Graduate Outreach Representative, Institute for Astronomy	Aug 2022 - Sep 2023
	Earth & Planetary Sciences Representative, Graduate Student Organization	May 2022 - Dec 2022
	Graduate Student Representative, Justice, Equity, Diversity, and Inclusion Committee	Aug 2021 - Jul 2022

Programming Skills

Proficient	Python LaTeX Bash
Novice	IDL MATLAB R C

Conferences and Presentations

Talks	AASTCS: Extreme Solar Systems V	Mar 2024
	- Measuring the magnetic fields of pre-main sequence M dwarfs with iSHELL	
	Stellar Magnetic Fields, Munich Institute for Astro-, Particle, and Bio-Physics (invited)	Oct 2023
	- Measuring the magnetic fields of pre-main sequence M dwarfs with iSHELL	

	Earth and Planetary Sciences Department Colloquium Talk	Nov 2021
	- <i>Bullard Talk: Hidden Binary Stars in a Young Stellar Association</i>	
	American Geophysical Union Fall Meeting	Dec 2019
	- <i>Laboratory Aeronomy by Electron Impact of CO and CO₂ for Analysis of UV Observations of the Martian Upper Atmosphere</i>	
Posters	Protostars & Planets VII	Apr 2023
	- <i>Revisiting the Membership, Multiplicity, and Age of the BPMG in the Gaia Era</i>	
	NExScl Sagan Summer Workshop	Jul 2022
	- <i>Census & Age of the Beta Pictoris Moving Group with Gaia DR3</i>	
	American Geophysical Union Fall Meeting	Dec 2021
	- <i>Mars and Venus Dayglow Studies Based Upon Laboratory Aeronomy from Electron Impact of CO₂ for analysis of UV Observations by MAVEN, EMM, MEX, and VEX</i>	
	NExScl Sagan Summer Workshop	Jul 2021
	- <i>Hidden Binaries in the Beta Pictoris Moving Group</i>	
Contributor	Europlanet Science Congress (Talk)	Sep 2022
	- <i>The CO Cameron bands in the Mars dayglow and aurora: consequences of revised cross sections</i>	
	American Geophysical Union Fall Meeting (Poster)	Dec 2019
	- <i>Comparison of Titan and Earth UV Dayglow: Cascade UV Spectrum of the LBH Band System of N₂ by Electron Impact</i>	

Refereed Publications

- 3 First Author **Lee, R. A.** + 4 authors. "Revisiting the Membership, Multiplicity, and Age of the Beta Pictoris Moving Group in the *Gaia* Era" 2023, MNRAS, 528(3), 4760.
- Lee, R. A.** + 11 authors. "Laboratory Study of the Cameron Bands and UV Doublet in the Middle Ultraviolet 180–300 nm by Electron Impact upon CO₂ with Application to Mars" 2022, Astrophysical Journal, 938, 99.
- Lee, R. A.** + 9 authors. "Laboratory Study of the Cameron Bands, the Fourth Positive Bands, and the First Negative Bands in the Middle Ultraviolet 180-300 nm by Electron Impact on CO" 2021, Journal of Geophysical Research: Planets, 126, 2020JE006602.
- 6 Contributing Gaidos, E., Hirano, T., **Lee, R. A.**, + 7 authors. "Planet(esimal)s Around Stars with TESS (PAST) III: A Search for Triplet He I in the Atmospheres of Two 200 Myr-old Planets" 2022, Monthly Notices of the Royal Astronomical Society. *Accepted Oct 2022.* on arXiv.
- El Mufti, M., + 95 authors, including **Lee, R. A.** "TOI 560 - Two Transiting planets Orbiting a K dwarf Validated with iSHELL, PFS and HIRES RVs" 2021, AAS Journals. *Accepted Oct 2022.* on arXiv.
- Cale, B. + 54 authors, including **Lee, R. A.** "Diving Beneath the Sea of Stellar Activity: Chromatic Radial Velocities of the Young AU Mic Planetary System" 2021, Astronomical Journal, 162, 295.
- Gaidos, E. + 23 authors, including **Lee, R. A.** "Zodiacal Exoplanets in Time (ZEIT) XII: A Directly-Imaged Planetary-Mass Companion to a Young Taurus M Dwarf Star" 2021, Monthly Notices of the Royal Astronomical Society, 512, 10.1093/mnras/stab3069.
- Ajello, J. M. + 10 authors, including **Lee, R. A.** "The UV spectrum of the Lyman-Birge-Hopfield band system of N₂ induced by cascading from electron impact" 2020, Journal of Geophysical Research: Space Physics, 125, 2019JA027546.
- de Leeuw, J. + 18 authors, including **Lee, R. A.** "Similar event-related potentials to structural violations in music and language: A replication of Patel, Gibson, Ratner, Besson, & Holcomb (1998)" 2019, Metapsychology, 3, MP.2018.1481.

Awarded Proposals

Funding

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| Co-I | TESS Guest Investigator Program Cycle 4 | 2021 |
| | <i>Rotation and Multiplicity of Hyades M Dwarf Stars (PI Eric Gaidos)</i> | |

Observing

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| PI | Confirming a New Sample of Variable Ultracool Dwarfs, NASA IRTF 13 hrs | 2023A |
| | Hidden Binaries in the Beta Pictoris Moving Group, NASA IRTF 39 hrs | 2021B-2022A |
| | Hidden Binaries in the Beta Pictoris Moving Group, NAOJ Subaru Telescope 12 hrs | 2021B |
| Co-I | Composition of Rocky Planets around Thick-disk Stars, Gemini-North 1 night | 2024A |

	Running Out of Gas near the End of Planet Formation, NASA IRTF 6.25 hrs	2022B
	Transit Spectroscopy of a Nearby Young Exo-Neptune, NASA IRTF 6.5 hrs	2022A
	Transit Spectroscopy of a Nearby Super-Earth, Subaru Telescope 6.5 hrs	2022A
	Sleuthing the magnetic field, rotation, and age of a nearby M dwarf star, NASA IRTF 10.75 hrs	2022A
	Transit Spectroscopy of a Planet around a Nearby Bright Young Star, NASA IRTF 7.5 hrs	2021B
	Hidden Binaries in the Beta Pictoris Moving Group, NASA IRTF 21 hrs	2021A
Contributing	Multi-wavelength observations of GQ Lup, NASA IRTF 4 hrs	2023A
Observer	Is the inner disk of a nascent planet planetary system still accreting?, NASA IRTF 5 hrs	2023A
	Spectroscopy of Dipper Stars to reveal Inner Disk Dynamics, NASA IRTF 7.5 hrs	2022A
	Transit Spectroscopy of TOIs in the Neptune Desert, Subaru Telescope 9 hrs	2022A
	Rotation and Multiplicity of Hyades M Dwarf Stars, W.M. Keck Observatories 24 hrs	2021B
	TOI follow-up program, Plavchan Group, NASA IRTF ~30+ hrs	2020B-2021A

References available upon request.

Last Updated Feb 2024