

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
- Jan 2023 - **Dr. Michael Connelley**, *699-1 Project: Measuring the magnetic fields of the coolest pre-main sequence stars using iSHELL*, Honolulu, HI
- Sep 2023
 - Deriving stellar properties in conjunction with average magnetic field measurements of pre-main sequence M stars in the Beta Pictoris Moving Group using a MCMC framework, utilizing high resolution K-band spectra obtained with iSHELL at IRTF.
- Aug 2020 - **Dr. Eric Gaidos**, *Master's Thesis: Relating Multiplicity and Rotational Evolution among Young M Dwarf Stars in the Beta Pictoris Moving Group*, Honolulu, HI
- Dec 2022
 - Obtaining, reducing, and analyzing 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; observational campaign to detect and measure the stellar masses of companions in binary systems.
- Aug 2020 - **Dr. Peter Plavchan**, *TOI Follow-Up Program*, Fairfax, VA
- July 2022
 - Collaborator and observer for IR spectroscopic follow-up of TESS Objects of Interest, detecting and characterizing exoplanets around M Dwarf stars by radial velocity analysis.
- Aug 2021 - **Dr. Sonal Jain**, *MAVEN IUVS Science Team*, Boulder, CO
- July 2022
 - 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 - **Dr. Joseph Ajello**, *Laboratory Study of Planetary UV Emissions*, Boulder, CO
- Aug 2020
 - 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 - **Dr. Joseph Ajello & Dr. Charles Malone**, *NSF Research Experience for Undergraduates*, Boulder, CO
- Aug 2019
 - 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 Institute for Astronomy Outreach Service Award Jan 2023
- Graduate Division Achievement Scholarship, UH Mānoa (\$3K) Aug 2022
- NASA Exoplanet Science Institute Sagan Summer Workshop Travel Award Jul 2022

	National Science Foundation Graduate Research Fellowship (\$125K)	<i>Apr 2022 - Present</i>
	Fred Mason Bullard Fellowship (\$12K), UH Mānoa	<i>Aug 2020</i>
Undergraduate	Austin Endowed Student Travel Grant, American Geophysical Union	<i>Dec 2019</i>
	Internship Grant Fund, Vassar College	<i>Nov 2019</i>
	Grace Hopper Celebration Research Scholarship, Computing Research Association	<i>Oct 2019</i>
	QuestBridge National College Match Finalist	<i>Nov 2015</i>

Volunteering and Outreach

Graduate	Volunteer, Institute for Astronomy Outreach	
	- <i>Hawai'i Geek Meet</i>	<i>Sep 2022</i>
	- <i>Welina Mānoa: First Day of School Kick-Off Event</i>	<i>Aug 2022</i>
	- <i>Girl Scouts of Hawai'i STEM Camp</i>	<i>Jun 2022</i>
	- <i>IfA Open House</i>	<i>Apr 2022</i>
	- <i>Radio Telescope Demonstration</i>	<i>Feb 2022</i>
	- <i>Makahiki Games & Stargazing Event</i>	<i>Dec 2021</i>
	Mentor, Mauna Kea Scholars	<i>May 2022 - Present</i>
	Mentor, HI-STAR (Hawai'i Student/Teacher Astronomy Research) Summer Camp	<i>May 2021 - Present</i>
	Mentor and Volunteer, Honua Scholars	<i>Oct 2021 - Present</i>
	Alumna and Volunteer, QuestBridge Organization	<i>Aug 2016 - Present</i>
Undergraduate	Organizer, Night at the Observatory Events, Vassar College	<i>Aug 2019 - Feb 2020</i>
	Research and Coding Intern, Vassar Brothers Medical Center: The Heart Center	<i>Aug 2018 - May 2019</i>
	Middle School and College Prep Tutor, Vassar College Urban Education Initiative	<i>Aug 2016 - May 2018</i>

Academic Service

Graduate Outreach Representative, Institute for Astronomy	<i>Aug 2022 - Present</i>
Earth & Planetary Sciences Representative, Graduate Student Organization	<i>May 2022 - Present</i>
Graduate Student Representative, Justice, Equity, Diversity, and Inclusion Committee	<i>Aug 2021 - Jul 2022</i>

Programming Skills

Proficient	Python LaTeX Bash
Novice	IDL MATLAB R C

Conferences and Presentations

Talks	Earth and Planetary Sciences Department Colloquium Talk	<i>Nov 2021</i>
	- <i>Bullard Talk: Hidden Binary Stars in a Young Stellar Association</i>	
	American Geophysical Union Fall Meeting	<i>Dec 2019</i>
	- <i>Laboratory Aeronomy by Electron Impact of CO and CO₂ for Analysis of UV Observations of the Martian Upper Atmosphere</i>	
Posters	NExScl Sagan Summer Workshop	<i>Jul 2022</i>
	- <i>Census & Age of the Beta Pictoris Moving Group with Gaia DR3</i>	
	American Geophysical Union Fall Meeting	<i>Dec 2021</i>
	- <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	<i>Jul 2021</i>
	- <i>Hidden Binaries in the Beta Pictoris Moving Group</i>	
Contributor	Europlanet Science Congress (Talk)	<i>Sep 2022</i>
	- <i>The CO Cameron bands in the Mars dayglow and aurora: consequences of revised cross sections</i>	
	American Geophysical Union Fall Meeting (Poster)	<i>Dec 2019</i>
	- <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 <i>Gaia</i> Era" 2023, MNRAS. <i>Submitted Feb 2023.</i>
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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.

7 Contributing Gaidos, E., **Lee, R. A.**, + X authors. "Rotation and Multiplicity in the Beta Pictoris Moving Group" 2023, *Monthly Notices of the Royal Astronomical Society*. *in prep*.

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

Co-I TESS Guest Investigator Program Cycle 4 2021

Rotation and Multiplicity of Hyades M Dwarf Stars (PI Eric Gaidos)

Observing

PI 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 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 Spectroscopy of Dipper Stars to reveal Inner Disk Dynamics, NASA IRTF | 7.5 hrs 2022A
Observer 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.