

Dr. Joshua D. Lothringer

Space Telescope Science Institute
3700 San Martin Drive
Baltimore, MD 21219
Email: jlothringer@stsci.edu — Web: jlothringer.github.io
Last updated April 30, 2024

Research Interests	Observing, modeling, and retrieving planetary, exoplanetary, brown dwarf, and stellar atmospheres.										
Positions	<table><tr><td>Assistant Astronomer Space Telescope Science Institute Baltimore, MD</td><td>01/2024 - Present</td></tr><tr><td>Assistant Professor Department of Physics Utah Valley University Orem, UT</td><td>08/2021-12/2023</td></tr><tr><td>Postdoctoral Fellow Department of Physics and Astronomy Johns Hopkins University Baltimore, MD</td><td>08/2019-08/2021</td></tr><tr><td>Graduate Assistant/Associate Lunar and Planetary Laboratory University of Arizona Tucson, AZ</td><td>08/2014-08/2019</td></tr><tr><td>Command Controller Mission Operations and Data Systems, Laboratory for Atmospheric and Space Physics University of Colorado at Boulder Boulder, CO</td><td>05/2012-08/2014</td></tr></table>	Assistant Astronomer Space Telescope Science Institute Baltimore, MD	01/2024 - Present	Assistant Professor Department of Physics Utah Valley University Orem, UT	08/2021-12/2023	Postdoctoral Fellow Department of Physics and Astronomy Johns Hopkins University Baltimore, MD	08/2019-08/2021	Graduate Assistant/Associate Lunar and Planetary Laboratory University of Arizona Tucson, AZ	08/2014-08/2019	Command Controller Mission Operations and Data Systems, Laboratory for Atmospheric and Space Physics University of Colorado at Boulder Boulder, CO	05/2012-08/2014
Assistant Astronomer Space Telescope Science Institute Baltimore, MD	01/2024 - Present										
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Education	<table><tr><td><i>Doctor of Philosophy</i>, Planetary Science</td><td>08/2014-08/2019</td></tr><tr><td><i>Master of Science</i>, Planetary Science</td><td>12/2016</td></tr><tr><td>University of Arizona, Tucson, AZ Advisor: Prof. Travis Barman Dissertation: <i>Characterizing the Atmospheres of Planet Populations: From Sub-Jovian to Ultra-hot Jupiter Exoplanets</i></td><td></td></tr><tr><td><i>Bachelor of Arts</i>, Astronomy University of Colorado, Boulder CO Concentration: Astrophysics Minor: Philosophy</td><td>08/2010-12/2013</td></tr></table>	<i>Doctor of Philosophy</i> , Planetary Science	08/2014-08/2019	<i>Master of Science</i> , Planetary Science	12/2016	University of Arizona, Tucson, AZ Advisor: Prof. Travis Barman Dissertation: <i>Characterizing the Atmospheres of Planet Populations: From Sub-Jovian to Ultra-hot Jupiter Exoplanets</i>		<i>Bachelor of Arts</i> , Astronomy University of Colorado, Boulder CO Concentration: Astrophysics Minor: Philosophy	08/2010-12/2013		
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<i>Bachelor of Arts</i> , Astronomy University of Colorado, Boulder CO Concentration: Astrophysics Minor: Philosophy	08/2010-12/2013										

Publications
incl. submitted

1. **Lothringer, J.D.**, Zhou, Y., Apai, D., et al. “Atmospheric Retrievals of the Phase-resolved Spectra of Irradiated Brown Dwarfs WD-0137B and EPIC-2122B”, arXiv:2404.16813. Accepted in ApJ.
2. **Lothringer, J.D.**, Sing, D. K., Rustamkulov, Z., et al. “UV absorption by silicate cloud precursors in ultra-hot Jupiter WASP-178b”, 2022, *Nature*, 604, 49.
3. **Lothringer, J.D.**, Rustamkulov, Z., Sing, D. K., et al. “A New Window into Planet Formation and Migration: Refractory-to-Volatile Elemental Ratios in Ultra-hot Jupiters”, 2021, ApJ, 914, 12.
4. **Lothringer, J.D.**, & Casewell, S. L. “Atmosphere Models of Brown Dwarfs Irradiated by White Dwarfs: Analogs for Hot and Ultrahot Jupiters”, 2020, ApJ, 905, 163.
5. **Lothringer, J.D.**, Fu, G., Sing, D. K., & Barman, T. S. “UV Exoplanet Transmission Spectral Features as Probes of Metals and Rainout”, 2020, ApJL, 898, L14.
6. **Lothringer, J.D.**, & Barman, T. S. “The PHOENIX Exoplanet Retrieval Algorithm and Using H⁻ Opacity as a Probe in Ultrahot Jupiters”, 2020, AJ, 159, 289.
7. **Lothringer, J.D.**, & Barman, T. “The Influence of Host Star Spectral Type on Ultra-hot Jupiter Atmospheres”, 2019, ApJ, 876, 69.
8. **Lothringer, J.D.**, Barman, T., & Koskinen, T. “Extremely Irradiated Hot Jupiters: Non-oxide Inversions, H⁻ Opacity, and Thermal Dissociation of Molecules”, 2018, ApJ, 866, 27.
9. **Lothringer, J.D.**, Benneke, B., Crossfield, I. J. M., et al. “An HST/STIS Optical Transmission Spectrum of Warm Neptune GJ 436b”, 2018, AJ, 155, 66.
10. Bell, T. J., Crouzet, N., Cubillos, P.E., et al. “Nightside clouds and disequilibrium chemistry on the hot Jupiter WASP-43b”, arXiv:2401.13027. Accepted in *Nature Astronomy*.
11. Amaro, R. C., Apai, D., Lew, B. W. P., et al. ”Time-resolved Hubble Space Telescope Wide Field Camera 3 Spectrophotometry Reveals Inefficient Day-to-Night Heat Redistribution in the Highly Irradiated Brown Dwarf SDSS 1557B”, arXiv:2404.08087. Accepted in ApJ.
12. Kirk, J., Stevenson, K. B., Fu, G., et al., “JWST/NIRCam Transmission Spectroscopy of the Nearby Sub-Earth GJ 341b”, 2024, AJ, 167, 90.
13. Powell, D., Feinstein, A. D., Lee, E. K. H., et al., “Sulfur dioxide in the mid-infrared transmission spectrum of WASP-39b”, 2024, *Nature*, 626, 979.
14. Brande, J., Crossfield, I. J. M., Kreidberg, L., et al., “Clouds and Clarity: Revisiting Atmospheric Feature Trends in Neptune-size Exoplanets”, 2024, ApJL, 961, L23.
15. Reggiani, H., Galarza, J. Y., Schlaufman, K. C., et al., “Insight into the Formation of β Pic b through the Composition of Its Parent Protoplanetary

- Disk as Revealed by the β Pic Moving Group Member HD 181327”, 2024, *AJ*, 167, 45.
16. May, E. M., MacDonald, R. J., Bennett, K. A., et al., “Double Trouble: Two Transits of the Super-Earth GJ 1132 b Observed with JWST NIRSpec G395H”, 2023, *ApJL*, 959, L9.
 17. Lustig-Yaeger, J., Fu, G., May, E. M., et al., “A JWST transmission spectrum of the nearby Earth-sized exoplanet LHS 475 b”, 2023, *Nature Astronomy*, 7, 1317.
 18. Roy, P.-A., Benneke, B., Piaulet, C., et al., “Water Absorption in the Transmission Spectrum of the Water World Candidate GJ 9827 d”, 2023, *ApJL*, 954, L52.
 19. Coria, D. R., Crossfield, I. J. M., **Lothringer, J.D.**, et al. “The Missing Link: Testing Galactic Chemical Evolution Models with the First Multi-isotopic Abundances in Solar Twin Stars”, 2023, *ApJ*, 954, 121.
 20. Coulombe, L.-P., Benneke, B., Challener, R., et al. “A broadband thermal emission spectrum of the ultra-hot Jupiter WASP-18b”, 2023, *Nature*, 620, 292.
 21. van Sluijs, L., Birkby, J. L., **Lothringer, J.D.**, et al., “Carbon monoxide emission lines reveal an inverted atmosphere in the ultra hot Jupiter WASP-33 b consistent with an eastward hot spot”, 2023, *MNRAS*, 522, 2145.
 22. Tsai, S.-M., Lee, E. K. H., Powell, D., et al., “Photochemically produced SO₂ in the atmosphere of WASP-39b”, 2023, *Nature*, 617, 483.
 23. Grant, D., **Lothringer, J.D.**, Wakeford, H. R., et al., “Detection of Carbon Monoxide’s 4.6 Micron Fundamental Band Structure in WASP-39b’s Atmosphere with JWST NIRSpec G395H”, 2023, *ApJL*, 949, L15.
 24. Moran, S. E., Stevenson, K. B., Sing, D. K., et al., “High Tide or Riptide on the Cosmic Shoreline? A Water-rich Atmosphere or Stellar Contamination for the Warm Super-Earth GJ 486b from JWST Observations”, 2023, *ApJL*, 948, L11.
 25. Amaro, R. C., Apai, D., Zhou, Y., et al., “Hotter than Expected: Hubble Space Telescope (HST)/WFC3 Phase-resolved Spectroscopy of a Rare Irradiated Brown Dwarf with Strong Internal Heat Flux”, 2023, *ApJ*, 948, 129.
 26. Gressier, A., Lecavelier des Etangs, A., Sing, D. K., et al., “The Hubble PanCET program: The near-ultraviolet transmission spectrum of WASP-79b”, 2023, *A&A*, 672, A34.
 27. Feinstein, A. D., Radica, M., Welbanks, L., (**Lothringer, J.D. 1st tier**) et al., “Early Release Science of the exoplanet WASP-39b with JWST NIRISS”, 2023, *Nature*, 614, 670.
 28. Alderson, L., Wakeford, H. R., Alam, M. K., (**Lothringer, J.D. 1st tier**) et al., “Early Release Science of the exoplanet WASP-39b with JWST NIRSpec G395H”, 2023, *Nature*, 614, 664.

29. Rustamkulov, Z., Sing, D. K., Mukherjee, S., (**Lothringer, J.D. 1st tier**) et al., “Early Release Science of the exoplanet WASP-39b with JWST NIRSpec PRISM”, 2023, *Nature*, 614, 659.
30. Ahrer, E.-M., Stevenson, K. B., Mansfield, M., et al., “Early Release Science of the exoplanet WASP-39b with JWST NIRCam”, 2023, *Nature*, 614, 653.
31. JWST Transiting Exoplanet Community Early Release Science Team, Ahrer, E.-M., Alderson, L., (**Lothringer, J.D. 1st tier**) et al., “Identification of carbon dioxide in an exoplanet atmosphere”, 2023, *Nature*, 614, 649.
32. Mikal-Evans, T., Sing, D. K., Dong, J., et al. “A JWST NIRSpec Phase Curve for WASP-121b: Dayside Emission Strongest Eastward of the Substellar Point and Nightside Conditions Conducive to Cloud Formation”, 2023, *ApJL*, 943, L17.
33. Chachan, Y., Knutson, H. A., **Lothringer, J.D.**, & Blake, G. A. “Breaking Degeneracies in Formation Histories by Measuring Refractory Content in Gas Giants”, 2023, *ApJ*, 943, 112.
34. Kasper, D., Bean, J. L., Line, M. R., et al., “Unifying High- and Low-resolution Observations to Constrain the Dayside Atmosphere of KELT-20b/MASCARA-2b”, 2023, *AJ*, 165, 7.
35. Fu, G., Espinoza, N., Sing, D. K., et al., “Water and an Escaping Helium Tail Detected in the Hazy and Methane-depleted Atmosphere of HAT-P-18b from JWST NIRISS/SOSS”, 2022, *ApJL*, 940, L35.
36. Brande, J., Crossfield, I. J. M., Kreidberg, L., et al., “A Mirage or an Oasis? Water Vapor in the Atmosphere of the Warm Neptune TOI-674 b”, 2022, *AJ*, 164, 197.
37. Kreidberg, L., Mollière, P., Crossfield, I. J. M., et al., “Tentative Evidence for Water Vapor in the Atmosphere of the Neptune-sized Exoplanet HD 106315c”, 2022, *AJ*, 164, 124.
38. Buzard, C., Casewell, S. L., **Lothringer, J.D.**, & Blake, G. A., “Near-infrared Spectra of the Inflated Post-common Envelope Brown Dwarf NLTT 5306 B”, 2022, *AJ*, 163, 262.
39. Gibson, N. P., Nugroho, S. K., **Lothringer, J.D.**, Maguire, C., & Sing, D. K., “Relative abundance constraints from high-resolution optical transmission spectroscopy of WASP-121b, and a fast model-filtering technique for accelerating retrievals”, 2022, *MNRAS*, 512, 4618.
40. Fu, G., Sing, D. K., Deming, D., et al., “The Hubble PanCET Program: Emission Spectrum of Hot Jupiter HAT-P-41b”, 2022, *AJ*, 163, 190.
41. Reggiani, H., Schlaufman, K. C., Healy, B. F., **Lothringer, J.D.**, & Sing, D. K., “Evidence that the Hot Jupiter WASP-77 A b Formed Beyond Its Parent Protoplanetary Disk’s H₂O Ice Line”, 2022, *AJ*, 163, 159.
42. Bruno, G., Lewis, N. K., Valenti, J. A., et al., “Hiding in plain sight: observing planet-starspot crossings with the James Webb Space Telescope”, 2022, *MNRAS*, 509, 5030.

43. Fu, G., Sing, D. K., **Lothringer, J.D.**, et al., “Strong H₂O and CO Emission Features in the Spectrum of KELT-20b Driven by Stellar UV Irradiation”, 2022, *ApJL*, 925, L3.
44. Zhou, Y., Apai, D., Tan, X., et al., “HST/WFC3 Complete Phase-resolved Spectroscopy of White-dwarf-brown-dwarf Binaries WD 0137 and EPIC 2122”, 2022, *AJ*, 163, 17.
45. Fu, G., Deming, D., May, E., et al., “The Hubble PanCET program: Transit and Eclipse Spectroscopy of the Hot-Jupiter WASP-74b”, 2021, *AJ*, 162, 271.
46. Sainsbury-Martinez, F., Casewell, S. L., **Lothringer, J.D.**, Phillips, M. W., & Tremblin, P., “Exploring deep and hot adiabats as a potential solution to the radius inflation problem in brown dwarfs. Long-timescale models of the deep atmospheres of KELT-1b, Kepler-13Ab, and SDSS1411B”, 2021, *A&A*, 656, A128.
47. Merritt, S. R., Gibson, N. P., Nugroho, S. K., et al., “An inventory of atomic species in the atmosphere of WASP-121b using UVES high-resolution spectroscopy”, 2021, *MNRAS*, 506, 3853.
48. Fu, G., Deming, D., **Lothringer, J.D.**, et al., “The Hubble PanCET Program: Transit and Eclipse Spectroscopy of the Strongly Irradiated Giant Exoplanet WASP-76b”, 2021, *AJ*, 162, 108.
49. Wilson, J., Gibson, N. P., **Lothringer, J.D.**, et al., “Gemini/GMOS optical transmission spectroscopy of WASP-121b: signs of variability in an ultra-hot Jupiter?”, 2021, *MNRAS*, 503, 4787.
50. Mikal-Evans, T., Crossfield, I. J. M., Benneke, B., et al., “Transmission Spectroscopy for the Warm Sub-Neptune HD 3167c: Evidence for Molecular Absorption and a Possible High-metallicity Atmosphere”, 2021, *AJ*, 161, 18.
51. Guo, X., Crossfield, I. J. M., Dragomir, D., et al., “Updated Parameters and a New Transmission Spectrum of HD 97658b”, 2020, *AJ*, 159, 239.
52. Gibson, N. P., Merritt, S., Nugroho, S. K., et al., “Detection of Fe I in the atmosphere of the ultra-hot Jupiter WASP-121b, and a new likelihood-based approach for Doppler-resolved spectroscopy”, 2020, *MNRAS*, 493, 2215.
53. Turner, J. D., de Mooij, E. J. W., Jayawardhana, R., et al., “Detection of Ionized Calcium in the Atmosphere of the Ultra-hot Jupiter KELT-9b”, 2020, *ApJL*, 888, L13.
54. Benneke, B., Wong, I., Piaulet, C., et al., “Water Vapor and Clouds on the Habitable-zone Sub-Neptune Exoplanet K2-18b”, 2019, *ApJL*, 887, L14.
55. Benneke, B., Knutson, H. A., **Lothringer, J.D.**, et al., “A sub-Neptune exoplanet with a low-metallicity methane-depleted atmosphere and Mie-scattering clouds”, 2019, *Nature Astronomy*, 3, 813.

56. Steinrueck, M. E., Parmentier, V., Showman, A. P., **Lothringer, J.D.**, & Lupu, R. E., “The Effect of 3D Transport-induced Disequilibrium Carbon Chemistry on the Atmospheric Structure, Phase Curves, and Emission Spectra of Hot Jupiter HD 189733b”, 2019, ApJ, 880, 14.
57. Crossfield, I. J. M., **Lothringer, J.D.**, Flores, B., et al., “Unusual Isotopic Abundances in a Fully Convective Stellar Binary”, 2019, ApJL, 871, L3.
58. Fossati, L., Koskinen, T., **Lothringer, J.D.**, et al., “Extreme-ultraviolet Radiation from A-stars: Implications for Ultra-hot Jupiters”, 2018, ApJL, 868, L30.
59. Bean, J. L., Stevenson, K. B., Batalha, N. M., et al., “The Transiting Exoplanet Community Early Release Science Program for JWST”, 2018, PASP, 130, 114402.
60. Kilpatrick, B. M., Cubillos, P. E., Stevenson, K. B., et al., “Community Targets of JWST’s Early Release Science Program: Evaluation of WASP-63b”, 2018, AJ, 156, 103.
61. Bell, T. J., Nikolov, N., Cowan, N. B., et al., “The Very Low Albedo of WASP-12b from Spectral Eclipse Observations with Hubble, 2017, ApJL, 847, L2.
62. Stevenson, K. B., Lewis, N. K., Bean, J. L., et al., “Transiting Exoplanet Studies and Community Targets for JWST’s Early Release Science Program”, 2016, PASP, 128, 094401.
63. Crossfield, I. J. M., Ciardi, D. R., Petigura, E. A., et al., “197 Candidates and 104 Validated Planets in K2’s First Five Fields”, 2016, ApJS, 226, 7.

Proceedings and Other Publications

1. Ardila, D. R.; et al. “The UV-SCOPE Mission: Ultraviolet Spectroscopic Characterization Of Planets and their Environments”, Proceedings of the SPIE. id. 1218104. arXiv:2208.09547.
2. **Lothringer, J. D.** “Stellar specific intensity models used in ‘Hiding in plain sight: observing planet-starspot crossings with the James Webb Space Telescope’, 2021, Zenodo Software package, id. 5609421.

Invited Talks and Seminars

1. “Talk with Tuminez”, University-wide Town Hall with University President Astrid Tuminez, Utah Valley University, Orem, UT. Sept. 2023.
2. Convocation Lecture Series & Science Division Seminar, Snow College, Ephriam, UT. Aug. 2023.
3. Astronomy Colloquium, Anton Pannekoek Institute for Astronomy, University of Amsterdam. Nov. 2022.
4. Physics and Astronomy Colloquium, Brigham Young University, Provo, UT. Oct. 2022.
5. The Brown Dwarf to Exoplanet Connection in the Era of JWST Splinter Session at Exoplanets IV. Las Vegas. May 2022.
6. Physics Colloquium. Department of Physics, Utah Valley University, Orem, UT. Sep. 2021.

7. HotSci. Space Telescope Science Institute. Virtual. Jul. 2021.
8. Exoplanet Lunch. Center for Astrophysics, Harvard University. Virtual. Jan. 2021.
9. Exoplanet Journal Club. Jet Propulsion Laboratory. Virtual. Jan. 2021.
10. Star and Planet Seminar. Imperial College London. Virtual. Oct. 2020.
11. Exocoffee. Max Planck Institute for Astronomy. Virtual. May. 2020.
12. Exoplanet Tea. Massachusetts Institute of Technology. Cambridge, MA. Oct. 2019.
13. Exoplanet Lunch. Center for Astrophysics, Harvard University. Cambridge, MA. Oct. 2019.
14. Wine & Cheese Seminar. Center for Astrophysical Sciences, Johns Hopkins University, Baltimore, MD. Sep. 2019.
15. Theoretical Astrophysics Program Graduate Research Prize Talk. University of Arizona. Tucson, AZ. Apr. 2019.
16. Exoplanet Seminar. DTU Space. Lyngby, Denmark. Feb. 2019.
17. Star and Planet Formation Seminar. Max Planck Institute for Astronomy. Heidelberg, Germany. Jul. 2016.

**Select
Conference
Presentations**

1. “The UV Transmission Spectrum of Ultra-hot Jupiter WASP-178b.” Exoplanets IV. Las Vegas. May 2022.
2. “The Importance of UV Opacity in Extremely Irradiated Objects.” Stars and Planets in the UV. Virtual. May. 2021.
3. “Re-Interpreting UV-Optical Transmission Spectra of Hot and Ultra-Hot Jupiters.” 237th AAS Winter Meeting. Virtual. Jan. 2021.
4. “Understanding Ultra-hot Jupiters Through Irradiated Brown Dwarfs.” 235th AAS Winter Meeting. Honolulu, HI. Jan. 2020.
5. “Highly Irradiated Brown Dwarfs as High-mass Ultra-hot Jupiters.” BDExoCon. University of Delaware. Newark, DE. Oct. 2019.
6. “Characterizing the Atmospheres of Exoplanet Populations: From Sub-Jovian to Ultra-hot Jupiter Exoplanets.” American Astronomical Society Winter Meeting. Seattle, WA. Jan. 2019. Oral Presentation.
7. “Modeling the Most Extreme Jovian Atmospheres.” Exoplanets Around Hot Stars. Vanderbilt University, Nashville, TN. Jun. 2018. Oral Presentation.
8. “Self-Consistent Atmosphere Models of the Most Extreme Hot Jupiters.” American Astronomical Society Winter Meeting. Washington D.C. Jan. 2018. Oral Presentation.
9. “HST/STIS Observations of GJ 436b: A Warm-Neptune JWST GTO Target.” Enabling Transiting Exoplanet Science with JWST. Space Telescope Science Institute, Baltimore, MD. Jul. 2017. Poster Presentation.
10. “Characterizing Four Sub-Jovian Exoplanets with HST-STIS.” Exoplanets I. Davos, Switzerland. Jul. 2016. Poster Presentation.

**Honors,
Awards,
and Grants**
+\$2,000,000

PI of NSF S-STEM Program	2022-2023
-6-year UVU scholarship, mentorship, and research program (\$1,499,862) “Promoting Engagement in Chemistry, Physics, and Earth Sciences”	
Co-I of NASA XRP Program	2022-2025
-PI: Prof. Kevin Schlaufmann (JHU) “Exploring Planet Formation with Exoplanet Atmospheric Abundances”	
PI/Co-PI of 2 James Webb Space Telescope Programs	
-Program 2055 (\$100,211)	9.1 hours
“Tracing Hot Jupiter Formation and Migration with Volatile and Refractory Elements Ratios”	
-Program 2288 (\$113,998)	7.4 hours
“Formation and Impact of Silicate Clouds on L Dwarfs”	
Co-I on 4 James Webb Space Telescope Programs	150.3 hours
PI of 4 Hubble Space Telescope Programs	
-Program 16086 (\$86,995)	10 orbits
“Comparing Escaping Metals and Heat Deposition in Ultra-hot Jupiters”	
-Program 16142 (\$99,319)	AR Theory
“The First Grid of White-Dwarf-Irradiated Brown Dwarf Atmosphere Models”	
-Program 16270 (\$63,530)	20 orbits
“Heavy Metal Bands: A Study of Escaping Ions from the Hottest Jovian Atmospheres”	
-Program 16450 (\$45,465)	10 orbits
“Measuring the Rock-to-Ice Ratio in an Exoplanet”	
Co-I on 13 Hubble Space Telescope Programs	300+ orbits
Co-I on 1 Spitzer Space Telescope Program	61 hours
Director’s Discretionary Research Funds: CHEXO Funding (\$3,400)	2024
College of Science Dean’s Award of Excellence for Scholarship (\$2,750)	2023
Scholarly Activities Committee Dissemination Grant (\$1,344)	2022
Theoretical Astrophysics Program Graduate Research Prize (\$500)	2019
Galileo Circle Scholar (\$2,000)	2019
Galileo Circle Scholar (\$1,000)	2016
1st Place - The Art of Planetary Science - Data Art Category	2015
Graduate and Professional Student Council Travel Grant (\$250)	2015
2015 Sagan Workshop Travel Grant (\$700)	2015
Science Phoenix Award - SORCE Mission Operations	2014

**Observing
Experience**

James Webb Space Telescope - NIRSpec, NIRCам, and MIRI	150+ hours
Hubble Space Telescope - STIS and WFC3	300+ orbits
MMT - SWIRC and ARIES	12 nights
Sommers-Bausch Observatory (CU-Boulder) - Optical CCD	9 nights
W.M. Keck Observatory - OSIRIS	2 nights
Large Binocular Telescope - LMIRCам	1 night
Morris W. Offit Telescope (JHU) - Optical CCD	1 night

Mentorship

Undergraduate Research Mentor:	
• Austin Baldwin - Utah Valley University	2021-Present
-UVU URSCA Grant Recipient	-Utah Space Grant Recipient
• Audrey Elison - Utah Valley University	2023-Present

	<ul style="list-style-type: none"> • Brayden Roberts - Utah Valley University 2022-Present -<i>Utah Space Grant Recipient</i> • Brian Seamons - Utah Valley University 2022-Present -<i>Utah Space Grant Recipient</i> • Autumn Winch - Bryn Mawr College 2020-2022 -<i>Senior Thesis</i> -<i>Co-Author on Lothringer et al. 2022</i> -<i>Clinical Research Coordinator, University of Pennsylvania</i> 	
UVU Teaching	Instructor - ASTR-4100 - Exoplanets and Brown Dwarfs	Fall 2023
	Instructor - ASTR-1080 - Life in the Universe (3 sections)	2022-2023
	Instructor - PHSC-1000 - Survey of Physical Science	Spring 2022
	Instructor - PHYS-489R - Undergraduate Research (6 sections)	2022-2023
	Instructor - ASTR-1040 - Elementary Astronomy (12 Sections)	2021-2023
Other Teaching Experience	Guest Instructor - Exoplanetary Astrophysics (UMD)	2024
	Guest Instructor - Planets, Life, and the Universe (JHU)	2020
	Co-Instructor - Exoplanets & Their Atmospheres (JHU)	2020
	JHU Teaching Academy Certificate	2020
	JHU Summer Teaching Institute Workshop	2020
	LPL Incoming Graduate Student Mentor	2017-2019
	Pima Community College GED Prep Math Tutor	2015-2016
	Graduate Teaching Assistant and Guest Lecturer — PTYS 170B2	Fall 2014
Service and Other Experience	AAS Journals Reviewer	
	Astronomy & Astrophysics Reviewer	
	<i>Nature Astronomy</i> Reviewer	
	<i>Nature</i> Reviewer	
	Hubble Space Telescope Proposal Reviewer	
	Canadian Time Allocation Committee Reviewer	
	NSF Review Panelist	
	NASA Review Panel Executive Secretary	
	Chesapeake Bay Area Exoplanet Meeting Organizer	Spring 2024
	UVU Physics Department Advisory Board	2023-Present
	STARGATE Collaboration Executive Committee	2023-Present
	UV-SCOPE MIDEX Mission Concept Science Team	2020-Present
	JWST ERS Working Group	2017-Present
	JHU/STScI Undergraduate Summer Program Organizer	2020, 2021
	AAS Chambliss Poster Award Judge	2019, 2020
	LPL Men's Diversity and Inclusion Auxiliary	2016-2019
	LPL Conference Organizing Committee	2015-2017
	Visiting Student - Max Planck Institute for Astronomy	06-07/2016
	Graduate and Professional Student Council Travel Grant Judge	2015
Select Press Coverage & Interviews	JWST Transiting Exoplanet Community Early Release Science	
	• UVU Press Release	

- Fox 31 News Good Day Utah at 6AM
- KUER 90.1, Utah NPR

Lothringer & Sing et al. 2022

- NASA/Hubble Press Release
- Sky & Telescope
- The Bad Astronomer, SyFy Wire
- The Miami Herald

Benneke et al. 2019

- SkyMania
- IndiaTV News

In the Community

- UVU Wins \$1.5M NSF S-STEM Scholarship Program
- Hutchings Museum Institute JWST First Images Event
- Hutchings Museum Institute JWST Launch Celebration
- MAVEN Mission to Mars Launch
- No Man's Sky Video Game

Outreach

Guest Consultant - Ranger Rick Magazine

Latinos of Tomorrow Panelist

JWST Subject Matter Expert

2021-Present

- Salt Lake County Library Lecture Series (x2)

- UVU Colloquium (x2)

- Clarke Planetarium JWST Program

- Utah Valley Astronomy Club (x2)

- Hutchings Museum Institute First Image Event

- Hutchings Museum Institute Launch Celebration

STScI Outreach Program

2019-2021

-Space Astronomy Summer Program Presenter and Organizer

-Easy as Pi - Society of American Military Engineers

Reddit /r/AskScience Panel Member

2015-Present

LPL Outreach Program

2014-2019

-Summer Science Saturdays

-Tucson Festival of Books

-Art of Planetary Science

-Bennuval: An Evening of Space, Art, and Music

Exoplanet Lecture Series, Flandrau Planetarium, Tucson, AZ

Apr. 2018

Tucson Amateur Astronomy Association

Mar. 2018

The American International School of Muscat Science Expert

2018, 2019

Chaparral High School Career Expert

2018

The American International School of Muscat, Muscat, Oman

Jan. 2014

LASP MAVEN Launch Outreach

2014

Professional Affiliations

American Astronomical Society

Since 2014

Phi Beta Kappa Member

Since 2014

Planetary Society Member

Since 2011

Skills

IDL, Python, Fortran, Perl, Bash, Matlab, and Mathematica