

CURRICULUM VITAE

Luis Welbanks

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Research interests

Exoplanet atmospheres across planetary regimes, statistical and computational methods for atmospheric inference from space- and ground-based spectra, radiative transfer and atmospheric chemistry, and Bayesian model comparison and model criticism.

Appointments

2025–present	Assistant Professor , School of Earth and Space Exploration, Arizona State University
2024–2025	51 Pegasi b Fellow and Presidential Postdoctoral Fellow , School of Earth and Space Exploration, Arizona State University
2021–2024	NASA Sagan Fellow (NASA Hubble Fellowship Program), School of Earth and Space Exploration, Arizona State University

Education

2017–2021	PhD in Astronomy , Institute of Astronomy, University of Cambridge Thesis: <i>Towards Generalized Characterization of Exoplanet Atmospheres with Transit Spectroscopy</i> . Supervisor: Nikku Madhusudhan
2015–2017	MSc in Physics and Astronomy (Astrophysics) , University of Calgary Astroparticle physics. Supervisor: Rachid Ouyed
2011–2015	BSc with Honours, double major in Physics and Astrophysics , University of Calgary Ranked first in class

Honours and awards

2024	51 Pegasi b Fellowship, Heising-Simons Foundation
2024	Presidential Postdoctoral Fellowship, Arizona State University
2021	Sagan Fellowship, NASA Hubble Fellowship Program
2020	Murdin Prize, Institute of Astronomy, University of Cambridge Joint award for the best published paper by a current PhD student
2020	Named one of the Top 75 Alumni, Tecnológico de Monterrey, Mexico
2017	Gates Cambridge Scholarship, University of Cambridge First Gates Cambridge Scholar from Mexico in physics and astronomy
2016	Scholarship for Graduate International Research, Mexican Ministry of Education (SEP)
2015	National Council for Science and Technology (CONACyT) Scholarship, Mexico

2015	President's Award, University of Calgary One of five awards among all graduating students
2013	Silver Medal, University Physics Competition, sponsored by the American Physical Society and the American Astronomical Society
2011–2016	Scholarships at the University of Calgary, including College Scholar, the Dr. Cal Waddell Award and the Fujda Family Scholarship in Astrophysics

Research funding and telescope time

Grants	NASA Exoplanets Research Program (ROSES-2023), principal investigator Let the data speak for itself. Understanding the limits of current exoplanetary atmospheric models and their missing physics in a data-driven era Heising-Simons Foundation, principal investigator The Foundational Framework for Exoplanet Atmosphere Inference
Fellowships	51 Pegasi b Fellowship, Heising-Simons Foundation Unifying theory and modelling to bridge the gap between exoplanet atmospheric observations and their interpretation NASA Hubble Fellowship Program, Sagan Fellowship High-Definition Exo-Atmospheric Characterization with Transit Spectroscopy
JWST	Principal investigator of GO 8017 (18.6 hours). Co-principal investigator of GO 5959 (154.2 hours), GO 5311 (51.1 hours) and AR 6388 Co-investigator of GO 3969, 4082, 4098, 4938, 5634, 5863, 6932, 7407, 8597, 8696, 9025 and 9101, GTO 4536, and AR 3273, 5275, 6347 and 7358
Hubble	Co-investigator of GO 15814 (26 orbits), DD 17585 (12 orbits) and GO 17613 (24 orbits)
Ground	Principal investigator of five Gemini programs with IGRINS and IGRINS-2, more than 30 hours GS-2023A-FT-203, GS-2023B-Q-129, GS-2023B-Q-227, GS-2024A-FT-102 and GN-2025A-FT-101. Co-principal investigator of NASA IRTF 2025B024 (54 hours). Co-investigator on Las Cumbres Observatory programs (more than 210 hours) and on Gemini (IGRINS, IGRINS-2, MAROON-X) and Magellan/MIKE programs (more than 150 hours)
Space	Co-investigator, ESA CHEOPS (45 orbits) and XMM-Newton (72 ks)
Computing	Lawrence Livermore National Laboratory Computing Grand Challenge, 22.4 million core hours, ASU principal investigator The Next Generation of Exoplanet Atmospheric Models for the James Webb Space Telescope and Beyond. Also an NVIDIA Academic Grant (500 GPU hours, principal investigator) and the OpenAI and ASU Innovation Challenge in 2024 and 2025
Meetings	Other Worlds Laboratory mini-grant to establish EXOMINTS, the EXOplanet Model Interrogation and New Techniques Sprint, principal investigator

Teaching

Fall 2025	SES 191, Exploring SESE, Arizona State University Instructor of record, 61 students
2025	Lecturer, Exoplanets by the Lake III: Atmospheres and Beyond, Lake Ammer, Germany (four lectures on atmospheric modeling and retrievals, with hands-on tutorials), and guest lecturer, Vatican Observatory Summer School (VOSS 2025)

2025	Guest lecturer, PTYS 568 Exoplanets: Discovery and Characterization, University of Arizona
2022–2024	Guest lecturer, Exoplanet Atmospheres and Astrostatistics (SES 494/598), Arizona State University
2021	Guest lecturer, JWST Early Release Science pre-launch theory webinar, "Key aspects of atmospheric retrievals"
2019	Supervisions in Structure and Evolution of Stars, University of Cambridge
2012–2017	Teaching assistant (Optics and Electromagnetism, Introduction to Astrophysics, Applied Physics Laboratory), Peer Assisted Study Sessions leader, and tutor and mentor for refugee students, University of Calgary

Mentoring

Postdocs	Matthew Nixon and Sagnick Mukherjee, 51 Pegasi b Fellows (2025–present)
PhD students	Yoav Rotman (2022–present), Finnegan Keller (2025–present), Biruk Nardos Abebe (2025–present), Lana Tilke (2022–2025), and Valentina Forero Fuentes (secondary advisor, 2025–present)
Undergraduates	Isabel Kahn (NASA Space Grant intern), Ava Crane (Barrett honors thesis), Isabella Reese and Trace Eastman, Arizona State University. Paulina Padilla López, senior thesis co-advisor, Universidad Autónoma de Sinaloa
Co-advising	Lindsey Wiser, Peter Smith, Jorge A. Sanchez and Krishna Kanumalla, PhD students advised with Michael Line, Arizona State University

Professional service

Committees	Scientific Organizing Committee, Exoclimates VII. Co-President, Postdoctoral Committee, School of Earth and Space Exploration, ASU (2022–2023). Computing Users' Committee, University of Cambridge (2018–2021)
Review panels	Panel chair, NASA Keck time allocation committee. Panelist for the NASA Keck, JWST, Hubble and NOIRLab time allocation committees and for a NASA inclusion plan evaluation panel. Subject-matter expert reviewer for NASA
External review	Swiss National Science Foundation, JWST Director's Discretionary Time, and the Canadian Time Allocation Committee for the Canada-France-Hawaii Telescope
Referee	ApJ, ApJL, AJ, A&A, MNRAS, Space Science Reviews and Nature
Community	Member of NASA ExoPAG Study Analysis Group 21 (report). Member of the American Astronomical Society and the Canadian Association of Physicists. Fellow of the Royal Astronomical Society and of the Cambridge Philosophical Society

Outreach and community

2025	Founder, Astronomy on Tap: Valley of the Sun, serving the Phoenix metropolitan area
2025–present	Subject matter expert, Schiele Museum of Natural History and Planetarium, Gastonia, North Carolina
2023–present	Subject matter expert, NASA's Universe of Learning
2024–present	Public lectures for astronomy clubs in Prescott, Phoenix and Tempe, Arizona, and Omaha, Nebraska

2025	Speaker, RISE Leadership Institute
2022–2024	NASA Hubble Fellowship Program Mentorship Initiative
2022–2024	Director of Membership, Gates Cambridge Alumni Association
2020–2024	Committee for Diversity in Astronomy and Geophysics, Royal Astronomical Society
2017–2021	Public outreach in Cambridge, including Astronomy on Tap
2018–2021	Equality and Diversity Committee, Institute of Astronomy, University of Cambridge
2014–2021	Outreach talks for school students, including talks for the Instituto Politécnico Nacional, Mexico, in 2021
2019	Logistics organiser, XVII Symposium of Mexican Studies and Students in the UK
2012–2017	Founder and president, Latin American Students' Association, University of Calgary

Selected invited talks and lectures

2025	Invited review at the ESO workshop "Towards New Frontiers: The Astrochemical Journey from Young Stellar Nurseries to Exoplanets"
2025	Invited participant in the ISSI Breakthrough Workshop "Life Beyond Earth: the missing link"
2025	Invited talk at Know Thy Star, Know Thy Planet 2, lectures at Exoplanets by the Lake III and the Vatican Observatory Summer School, and seminars at The Open University and the Lunar and Planetary Laboratory, University of Arizona
2024	Seminars and colloquia at the Max Planck Institute for Astronomy, NASA Jet Propulsion Laboratory, University of Virginia, Institute for Astronomy (University of Hawai'i), Penn State, University of Illinois Urbana-Champaign, Carnegie Observatories, UCLA, Lawrence Livermore National Laboratory, UC Santa Cruz and Manipur Technical University
2023	Invited review at the Ninth Giant Magellan Telescope Community Science Meeting, and seminars at McGill University, University of Wisconsin–Madison, University of Arizona, University of Colorado Boulder and the American Museum of Natural History
2019–2022	Seminars at Carnegie Earth and Planets Laboratory, NYU Abu Dhabi, Tel Aviv University, NASA JPL, the Center for Astrophysics Harvard & Smithsonian, UC Santa Cruz, Caltech, University of Exeter and the Instituto de Astrofísica de Canarias

Contributed talks include Exoplanets 5, Extreme Solar Systems V, the MIRI Science Conference, the First Year of JWST Science Conference and AAS meetings 237 and 241.

Publications

Newest first, with my name in bold. The publications page keeps an up-to-date list with links to each paper.

First-author papers

8. **Welbanks, L.**, Hall, K. E., Wit, J. D., et al. (2026). Nautilus Space Observatory: Unveiling the Diversity and Origin of Sub-Neptunes with the Nautilus Space Observatory. arXiv:2607.00268.
7. **Welbanks, L.**, Nixon, M. C., McGill, P., et al. (2025). Challenges in the detection of gases in exoplanet atmospheres. *Nature Astronomy*, 10, 234. doi:10.1038/s41550-025-02730-4
6. **Welbanks, L.**, Bell, T. J., Beatty, T. G., et al. (2024). A high internal heat flux and large core in a warm Neptune exoplanet. *Nature*, 630, 836. doi:10.1038/s41586-024-07514-w

5. **Welbanks, L.**, McGill, P., Line, M., Madhusudhan, N. (2023). On the Application of Bayesian Leave-one-out Cross-validation to Exoplanet Atmospheric Analysis. *AJ*, 165, 112. doi:10.3847/1538-3881/acab67
4. **Welbanks, L.**, Madhusudhan, N. (2022). On Atmospheric Retrievals of Exoplanets with Inhomogeneous Terminators. *ApJ*, 933, 79. doi:10.3847/1538-4357/ac6df1
3. **Welbanks, L.**, Madhusudhan, N. (2021). Aurora: A Generalized Retrieval Framework for Exoplanetary Transmission Spectra. *ApJ*, 913, 114. doi:10.3847/1538-4357/abee94
2. **Welbanks, L.**, Madhusudhan, N., Allard, N. F., et al. (2019). Mass–Metallicity Trends in Transiting Exoplanets from Atmospheric Abundances of H₂O, Na, and K. *ApJL*, 887, L20. doi:10.3847/2041-8213/ab5a89
1. **Welbanks, L.**, Madhusudhan, N. (2019). On Degeneracies in Retrievals of Exoplanetary Transmission Spectra. *AJ*, 157, 206. doi:10.3847/1538-3881/ab14de

Preprints

8. Nixon, M. C., et al. (including **Welbanks, L.**) (2026). Enhancing the Interpretability of Radial Velocity Analysis Using Leave-one-out Cross-validation. arXiv:2610.07181.
7. Weisserman, D., et al. (including **Welbanks, L.**) (2026). New and Updated Rossiter-McLaughlin Measurements for Three Hot Jupiter-Hosting M Dwarfs. arXiv:2609.03031.
6. **Welbanks, L.**, Hall, K. E., Wit, J. D., et al. (2026). Nautilus Space Observatory: Unveiling the Diversity and Origin of Sub-Neptunes with the Nautilus Space Observatory. arXiv:2607.00268.
5. Feinstein, A. D., et al. (including **Welbanks, L.**) (2026). Mapping Stellar Heterogeneities with the Nautilus Space Observatory. arXiv:2606.30706.
4. Pascucci, I., et al. (including **Welbanks, L.**) (2026). Nautilus Space Observatory: The Evolution of Planets and their Atmospheres. arXiv:2606.26214.
3. Murphy, M. M., et al. (including **Welbanks, L.**) (2026). KRONOS II: Solar-like Umbra and Penumbra Properties on the Young Sun V1298 Tau. arXiv:2606.16782.
2. Triantafillides, A., et al. (including **Welbanks, L.**) (2026). The Identification of CS₂ and Evidence for Carbon-Sulfur Chemical Coupling in a Warm Giant Exoplanet Atmosphere. arXiv:2604.13168.
1. Feinstein, A. D., et al. (including **Welbanks, L.**) (2025). On Linking Planet Formation Models, Protoplanetary Disk Properties, and Mature Gas Giant Exoplanet Atmospheres. arXiv:2506.00669.

All journal articles

91. Mehta, N., et al. (including **Welbanks, L.**) (2026). The tale of the three planets: 3D cloud feedback increases the spectral diversity of warm Jupiters. *A&A*. doi:10.1051/0004-6361/202660698
90. Pan, Y., et al. (including **Welbanks, L.**) (2026). JWST MEP—A World Under Spotty Starlight: Detection of CO₂ and H₂O in the Hot Saturn WASP-52b with JWST NIRSpec G395H. *AJ*, 172, 234. doi:10.3847/1538-3881/ae9cbc
89. Yang, J., et al. (including **Welbanks, L.**) (2026). Photochemical Production of CS₂ in Temperate-to-warm Gas Giant Exoplanet Atmospheres. *ApJL*, 1009, L29. doi:10.3847/2041-8213/aea4af
88. Zhang, M., et al. (including **Welbanks, L.**) (2026). C, N, O, S, and Photochemistry in a Temperate Giant Planet Orbiting a Late M Dwarf. *ApJL*, 1009, L28. doi:10.3847/2041-8213/aea4ae
87. Coulombe, L.-P., et al. (including **Welbanks, L.**) (2026). Inhomogeneous Cloud Coverage and Altitude-dependent Heat Transport on the Hot-Jupiter NGTS-10 Ab from its Optical-to-infrared Phase Curve. *PASP*, 138, 094403. doi:10.1088/1538-3873/aea59a
86. Barstow, J. K., **Welbanks, L.** (2026). Computational challenges in exoplanet atmospheric retrieval. *Living Reviews in Computational Astrophysics*, 12, 6. doi:10.1007/s41115-026-00031-9
85. Kanumalla, K., et al. (including **Welbanks, L.**) (2026). The Roasting Marshmallows Program with IGRINS on Gemini South. V. Atmosphere of MASCARA-1 b Is Enriched in Refractory Elements. *AJ*, 172, 83. doi:10.3847/1538-3881/ae77f1

84. Mukherjee, S., Nixon, M. C., **Welbanks, L.**, et al. (2026). Impact of Clouds on the Atmosphere–Mantle Interface of Sub-Neptunes. *ApJL*, 1005, L63. doi:10.3847/2041-8213/ae7432
83. Murphy, M. M., et al. (including **Welbanks, L.**) (2026). KRONOS I: The 1–2.8 μm JWST Transmission Spectrum of the 23 Myr V1298 Tau c. *AJ*, 172, 66. doi:10.3847/1538-3881/ae7a32
82. Murray, C. A., et al. (including **Welbanks, L.**) (2026). A Panchromatic JWST Spectrum of a Giant Starspot on the Fully Convective M Dwarf TOI-3884. *ApJL*, 1003, L45. doi:10.3847/2041-8213/ae6fb6
81. Bello-Arufe, A., et al. (including **Welbanks, L.**) (2026). Methane on the Temperate Exo-Saturn TOI-199 b. *AJ*, 171, 354. doi:10.3847/1538-3881/ae4fba
80. Rackham, B. V., et al. (including **Welbanks, L.**) (2026). NASA's Pandora SmallSat Mission: Simulating the Impact of Stellar Photospheric Heterogeneity and Its Correction. *AJ*, 171, 338. doi:10.3847/1538-3881/ae5f63
79. Parmentier, V., Stevenson, K. B., **Welbanks, L.**, et al. (2026). Horizontal transport as a source of disequilibrium chemistry on the nightside of a hot exoplanet. *Nature Astronomy*, 10, 1011. doi:10.1038/s41550-026-02845-2
78. Radica, M., et al. (including **Welbanks, L.**) (2026). Supersolar Metallicity and Tentative Evidence for Photochemistry on WASP-96 b from JWST and Ground-based VLT Transmission Spectroscopy. *AJ*, 171, 314. doi:10.3847/1538-3881/ae5b9f
77. Rotman, Y., McGill, P., **Welbanks, L.**, et al. (2026). NASA's Pandora SmallSat Mission: Simulated Modeling and Retrieval of Near-infrared Exoplanet Transmission Spectra. *AJ*, 171, 263. doi:10.3847/1538-3881/ae4d3c
76. Mehta, N., et al. (including **Welbanks, L.**) (2026). Cloudy solutions for the clear skies of WASP-80b: 3D cloud feedback on the atmosphere and spectra of a warm Jupiter. *A&A*, 707, A394. doi:10.1051/0004-6361/202557411
75. Sanchez, J. A., et al. (including **Welbanks, L.**) (2026). A Stellar magnesium to silicon ratio in the atmosphere of an exoplanet. *Nature Communications*, 17, 2902. doi:10.1038/s41467-026-69610-x
74. **Welbanks, L.**, Nixon, M. C., McGill, P., et al. (2025). Challenges in the detection of gases in exoplanet atmospheres. *Nature Astronomy*, 10, 234. doi:10.1038/s41550-025-02730-4
73. Nixon, M. C., et al. (including **Welbanks, L.**) (2025). Magma Ocean Interactions Can Explain JWST Observations of the Sub-Neptune TOI-270 d. *ApJ*, 995, 95. doi:10.3847/1538-4357/ae17c8
72. Crossfield, I. J. M., et al. (including **Welbanks, L.**) (2025). Mapping the SO₂ Shoreline in Gas Giant Exoplanets. *ApJ*, 994, 184. doi:10.3847/1538-4357/ae17cb
71. Weisserman, D., et al. (including **Welbanks, L.**) (2025). Aligned Stellar Obliquities for Two Hot Jupiter-hosting M Dwarfs Revealed by MAROON-X: Implications for Hot Jupiter Formation. *AJ*, 170, 313. doi:10.3847/1538-3881/ae08aa
70. Challener, R. C., et al. (including **Welbanks, L.**) (2025). Horizontal and vertical exoplanet thermal structure from a JWST spectroscopic eclipse map. *Nature Astronomy*, 9, 1821. doi:10.1038/s41550-025-02666-9
69. Oza, A. V., et al. (including **Welbanks, L.**) (2025). Volcanic satellites tidally venting Na, K, and SO₂ in optical and infrared light. *MNRAS*, 546, staf1526. doi:10.1093/mnras/staf1526
68. Seager, S., **Welbanks, L.**, Ellerbroek, L., et al. (2025). Prospects for detecting signs of life on exoplanets in the JWST era. *PNAS*, 122, e2416188122. doi:10.1073/pnas.2416188122
67. Wiser, L. S., et al. (including **Welbanks, L.**) (2025). A precise metallicity and carbon-to-oxygen ratio for a warm giant exoplanet from its panchromatic JWST emission spectrum. *PNAS*, 122, e2416193122. doi:10.1073/pnas.2416193122
66. Rotman, Y., **Welbanks, L.**, Line, M. R., et al. (2025). Enabling Robust Exoplanet Atmospheric Retrievals with Gaussian Processes. *ApJ*, 989, 201. doi:10.3847/1538-4357/ade04
65. Panwar, V., et al. (including **Welbanks, L.**) (2025). The Roasting Marshmallows Program with IGRINS on Gemini South III: Seeing deeper into the metal depleted atmosphere of a gas-giant on the cusp of the hot to ultra-hot Jupiter transition. *MNRAS*, staf1150. doi:10.1093/mnras/staf1150
64. Murphy, M. M., et al. (including **Welbanks, L.**) (2025). A Panchromatic Characterization of the Evening and Morning Atmosphere of WASP-107 b: Composition and Cloud Variations, and Insight into the Effect of Stellar Contamination. *AJ*, 170, 61. doi:10.3847/1538-3881/addf38

63. Fu, G., et al. (including **Welbanks, L.**) (2025). Statistical Trends in JWST Transiting Exoplanet Atmospheres. *ApJ*, 986, 1. doi:10.3847/1538-4357/ad7bb8
62. Ahrer, E.-M., et al. (including **Welbanks, L.**) (2025). Escaping Helium and a Highly Muted Spectrum Suggest a Metal-enriched Atmosphere on Sub-Neptune GJ 3090 b from JWST Transit Spectroscopy. *ApJL*, 985, L10. doi:10.3847/2041-8213/add010
61. Murphy, M. M., Beatty, T. G., **Welbanks, L.**, Fu, G. (2025). HST Transmission Spectra of the Hot Neptune HD 219666 b: Detection of Water and the Challenge of Constraining Both Water and Methane. *AJ*, 169, 286. doi:10.3847/1538-3881/ad684
60. Mukherjee, S., et al. (including **Welbanks, L.**) (2025). A JWST Panchromatic Thermal Emission Spectrum of the Warm Neptune Archetype GJ 436b. *ApJL*, 982, L39. doi:10.3847/2041-8213/adba46
59. Bello-Arufe, A., et al. (including **Welbanks, L.**) (2025). Evidence for a Volcanic Atmosphere on the Sub-Earth L 98-59 b. *ApJL*, 980, L26. doi:10.3847/2041-8213/adaf22
58. Bartelt, D., et al. (including **Welbanks, L.**) (2025). A Measurement of the Water Abundance in the Atmosphere of the Hot Jupiter WASP-43b with High-resolution Cross-correlation Spectroscopy. *AJ*, 169, 101. doi:10.3847/1538-3881/ad9b95
57. Ohno, K., et al. (including **Welbanks, L.**) (2025). A Possible Metal-dominated Atmosphere below the Thick Aerosols of GJ 1214 b Suggested by Its JWST Panchromatic Transmission Spectrum. *ApJL*, 979, L7. doi:10.3847/2041-8213/ada02c
56. Smith, P. C. B., et al. (including **Welbanks, L.**) (2024). The Roasting Marshmallows Program with IGRINS on Gemini South. II. WASP-121 b has Superstellar C/O and Refractory-to-volatile Ratios. *AJ*, 168, 293. doi:10.3847/1538-3881/ad8574
55. Thao, P. C., et al. (including **Welbanks, L.**) (2024). The Featherweight Giant: Unraveling the Atmosphere of a 17 Myr Planet with JWST. *AJ*, 168, 297. doi:10.3847/1538-3881/ad81d7
54. Masuda, K., et al. (including **Welbanks, L.**) (2024). A Fourth Planet in the Kepler-51 System Revealed by Transit Timing Variations. *AJ*, 168, 294. doi:10.3847/1538-3881/ad83d3
53. Kanumalla, K., et al. (including **Welbanks, L.**) (2024). IGRINS Observations of WASP-127 b: H₂O, CO, and Super-solar Atmospheric Metallicity in the Inflated Sub-Saturn. *AJ*, 168, 201. doi:10.3847/1538-3881/ad72f3
52. Schlawin, E., et al. (including **Welbanks, L.**) (2024). Possible Carbon Dioxide above the Thick Aerosols of GJ 1214 b. *ApJL*, 974, L33. doi:10.3847/2041-8213/ad7fef
51. Piaulet-Ghorayeb, C., et al. (including **Welbanks, L.**) (2024). JWST/NIRISS Reveals the Water-rich "Steam World" Atmosphere of GJ 9827 d. *ApJL*, 974, L10. doi:10.3847/2041-8213/ad6f00
50. Murphy, M. M., et al. (including **Welbanks, L.**) (2024). Evidence for morning-to-evening limb asymmetry on the cool low-density exoplanet WASP-107 b. *Nature Astronomy*, 8, 1562. doi:10.1038/s41550-024-02367-9
49. Schlawin, E., et al. (including **Welbanks, L.**) (2024). Multiple Clues for Dayside Aerosols and Temperature Gradients in WASP-69 b from a Panchromatic JWST Emission Spectrum. *AJ*, 168, 104. doi:10.3847/1538-3881/ad58e0
48. Wiser, L. S., Line, M. R., **Welbanks, L.**, et al. (2024). Lessons from Hubble and Spitzer: 1D Self-consistent Model Grids for 19 Hot Jupiter Emission Spectra. *ApJ*, 971, 33. doi:10.3847/1538-4357/ad5097
47. Espinoza, N., et al. (including **Welbanks, L.**) (2024). Inhomogeneous terminators on the exoplanet WASP-39 b. *Nature*, 632, 1017. doi:10.1038/s41586-024-07768-4
46. Carter, A. L., et al. (including **Welbanks, L.**) (2024). A benchmark JWST near-infrared spectrum for the exoplanet WASP-39 b. *Nature Astronomy*, 8, 1008. doi:10.1038/s41550-024-02292-x
45. Fu, G., **Welbanks, L.**, Deming, D., et al. (2024). Hydrogen sulfide and metal-enriched atmosphere for a Jupiter-mass exoplanet. *Nature*, 632, 752. doi:10.1038/s41586-024-07760-y
44. Beatty, T. G., **Welbanks, L.**, Schlawin, E., et al. (2024). Sulfur Dioxide and Other Molecular Species in the Atmosphere of the Sub-Neptune GJ 3470 b. *ApJL*, 970, L10. doi:10.3847/2041-8213/ad55e9
43. Flagg, L., et al. (including **Welbanks, L.**) (2024). Debris Disks Can Contaminate Mid-infrared Exoplanet Spectra: Evidence for a Circumstellar Debris Disk around Exoplanet Host WASP-39. *ApJL*, 969, L19. doi:10.3847/2041-8213/ad4649

42. **Welbanks, L.**, Bell, T. J., Beatty, T. G., et al. (2024). A high internal heat flux and large core in a warm Neptune exoplanet. *Nature*, 630, 836. doi:10.1038/s41586-024-07514-w
41. Nixon, M. C., **Welbanks, L.**, McGill, P., Kempton, E. M. R. (2024). Methods for Incorporating Model Uncertainty into Exoplanet Atmospheric Analysis. *ApJ*, 966, 156. doi:10.3847/1538-4357/ad354e
40. Bell, T. J., et al. (including **Welbanks, L.**) (2024). Nightside clouds and disequilibrium chemistry on the hot Jupiter WASP-43b. *Nature Astronomy*, 8, 879. doi:10.1038/s41550-024-02230-x
39. Gandhi, S., et al. (including **Welbanks, L.**) (2024). Revealing H₂O dissociation in WASP-76 b through combined high- and low-resolution transmission spectroscopy. *MNRAS*, 530, 2885. doi:10.1093/mnras/stae1048
38. Sun, Q., Wang, S. X., **Welbanks, L.**, et al. (2024). A Revisit of the Mass–Metallicity Trends in Transiting Exoplanets. *AJ*, 167, 167. doi:10.3847/1538-3881/ad298d
37. Xue, Q., et al. (including **Welbanks, L.**) (2024). JWST Transmission Spectroscopy of HD 209458b: A Supersolar Metallicity, a Very Low C/O, and No Evidence of CH₄, HCN, or C₂H₂. *ApJL*, 963, L5. doi:10.3847/2041-8213/ad2682
36. Smith, P. C. B., et al. (including **Welbanks, L.**) (2024). A Combined Ground-based and JWST Atmospheric Retrieval Analysis: Both IGRINS and NIRSpec Agree that the Atmosphere of WASP-77A b Is Metal-poor. *AJ*, 167, 110. doi:10.3847/1538-3881/ad17bf
35. Powell, D., et al. (including **Welbanks, L.**) (2024). Sulfur dioxide in the mid-infrared transmission spectrum of WASP-39b. *Nature*, 626, 979. doi:10.1038/s41586-024-07040-9
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