

# Katelyn Horstman

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## EDUCATION

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### California Institute of Technology (Caltech)

Doctor of Philosophy in Astrophysics  
Advisor: Dr. Dimitri Mawet

Expected

September 2026

### California Institute of Technology (Caltech)

Master of Science in Astrophysics

June 2023

### University of California, Los Angeles (UCLA)

Bachelor of Science in Astrophysics  
Departmental Honors

June 2021

## SELECTED PRESENTATIONS

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### Research Presentations

Detection and Dynamics of Exoplanets (DDE)

June 2025

*Contributed talk*

Extremely Precise Radial Velocities (EPRV6)

June 2025

*Poster*

PKI Keck Lunch Talk

December 2024

*Invited talk*

Wang group meeting, CIERA/Northwestern

October 2024

*Talk*

SPIE Astronomical Telescopes + Instrumentation

June 2024

*Poster*

American Physical Society (APS) April Meeting

April 2024

*Invited talk*

Extreme Solar Systems (ExSS V)

March 2024

*Poster*

ExSoCal

December 2023

*Contributed talk*

Network of Young Researchers in Instrumentation for  
Astronomy (NYRIA)

November 2023

*Contributed talk*

Extremely Precise Radial Velocities (EPRV5)

March 2023

*Poster*

ESO Disks and Planets

November 2022

*Contributed talk*

Keck Science Meeting (KSM) <i>Poster</i>	September 2022
Spirit of Lyot 5 <i>Poster</i>	June 2022
240th American Astronomical Society (AAS) Meeting, Pasadena <i>Contributed talk</i>	June 2022
UCLA Undergraduate Research Week <i>Contributed talk</i>	February 2020

## Professional Development Presentations

PATHWAYS Symposium <i>Contributed talk</i>	May 2025
FUTURE of Physics at Caltech <i>Invited speaker</i>	October 2023
FUTURE Ignited at Caltech <i>Invited speaker</i>	October 2022

## Public Presentations

Caltech Astronomy Star Gazing Lecture <i>Panel member</i>	August 2023
Caltech Associates at Jet Propulsion Laboratory (JPL) <i>Invited talk</i>	May 2023

## FELLOWSHIPS AND AWARDS

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NSF Graduate Research Fellowship Recipient	2023
Keck Institute for Space Studies (KISS) Affiliate	2022
NSF Graduate Research Fellowship Honorable Mention	2021
Summer Undergraduate Research Fellow (SURF)	2020
UCLA Clay Trust Physical Science Scholarship	2020

## TEACHING AND MENTORSHIP

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Certificate of Practice in University Teaching (CTLO) <i>Pedagogy development and refinement</i>	Ongoing
Guest lecture on Celestial Mechanics <i>Ay 20, Basic Astronomy and the Galaxy</i>	2025
Summer Undergraduate Research Fellow (SURF) Mentor <i>Caltech undergraduate Anica Ancheta</i>	2025

Ay 126: Physical processes in the interstellar medium <i>Teaching assistant</i>	2023
Ay 124: Structure and Evolution of Galaxies <i>Teaching assistant</i>	2023
Ay 20: Basic Astronomy and the Galaxy <i>Teaching assistant</i>	2022

## SERVICE AND LEADERSHIP

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Gender Minorities and Women in Physics, Math, and Astronomy (GiWPMA) <i>President, organizing committee member</i>	2023-Ongoing
PMA Diversity, Equity, Inclusion, and Outreach committee <i>Graduate student task force member</i>	2023-Ongoing
Caltech Astrophysics graduate student mentorship chair <i>Facilitator for academic and social connections</i>	2022-2024, 2025-Ongoing
PATHWAYS Symposium <i>Organizer and participant</i>	2025
WAVE fellow mentor <i>Non-academic mentorship to summer students</i>	2025
GWIPMA mentorship chair <i>Facilitator for academic and social connections</i>	2024
Respect is part of research <i>Organizer and facilitator</i>	2024
CAPP program mentor <i>Mentorship to undergraduates applying to graduate school</i>	2022
Zeitschrift für Naturforschung A. <i>Invited journal reviewer</i>	2019

## SELECTED PUBLICATIONS

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### First or major contributing author

- [1] **Katelyn Horstman**, Jean-Baptiste Ruffio, Konstantin Batygin, et al. “RV Measurements of Directly Imaged Brown Dwarf GQ Lup B to Search for Exosatellites”. In: *AJ* 168.4, 175 (Oct. 2024), p. 175. doi: [10.3847/1538-3881/ad73d8](https://doi.org/10.3847/1538-3881/ad73d8). arXiv: [2408.10299 \[astro-ph.EP\]](https://arxiv.org/abs/2408.10299).
- [2] **Katelyn Horstman**, Jean-Baptiste Ruffio, Jason J. Wang, et al. “Fringing analysis and forward modeling of Keck Planet Imager and Characterizer (KPIC) spectra”. In: *Ground-based and Airborne Instrumentation for Astronomy X*. Ed. by Julia J. Bryant, Kentaro Motohara, and Joël. R. D. Vernet. Vol. 13096. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. July 2024, 130962E, 130962E. doi: [10.1117/12.3018020](https://doi.org/10.1117/12.3018020). arXiv: [2408.10173 \[astro-ph.EP\]](https://arxiv.org/abs/2408.10173).

- [3] Jean-Baptiste Ruffio, **Katelyn Horstman**, Dimitri Mawet, et al. “Detecting Exomoons from Radial Velocity Measurements of Self-luminous Planets: Application to Observations of HR 7672 B and Future Prospects”. In: *AJ* 165.3, 113 (Mar. 2023), p. 113. DOI: [10.3847/1538-3881/acb34a](https://doi.org/10.3847/1538-3881/acb34a). arXiv: [2301.04206 \[astro-ph.EP\]](https://arxiv.org/abs/2301.04206).
- [4] **Katelyn Horstman**, Michael P. Fitzgerald, James E. Lyke, et al. “Using Non-negative Matrix Factorization to Improve Calibration of the Keck OSIRIS Integral Field Spectrograph”. In: *PASP* 134.1036, 064504 (June 2022), p. 064504. DOI: [10.1088/1538-3873/ac7905](https://doi.org/10.1088/1538-3873/ac7905). arXiv: [2206.04070 \[astro-ph.IM\]](https://arxiv.org/abs/2206.04070).
- [5] **Katelyn Horstman**, Alice E. Shapley, Ryan L. Sanders, et al. “The MOSDEF survey: differences in SFR and metallicity for morphologically selected mergers at  $z \sim 2$ ”. In: *MNRAS* 501.1 (Feb. 2021), pp. 137–145. DOI: [10.1093/mnras/staa3502](https://doi.org/10.1093/mnras/staa3502). arXiv: [2008.04327 \[astro-ph.GA\]](https://arxiv.org/abs/2008.04327).
- [6] **Katelyn Horstman** and Virginia Trimble. “Correlation of Time from Submission to Acceptance of Astronomical Papers with Gender of Lead Author”. In: *Bulletin of the American Astronomical Society*. Vol. 52. Apr. 2020, 0204, p. 0204. DOI: [10.3847/25c2cfab.907653b3](https://doi.org/10.3847/25c2cfab.907653b3).
- [7] **Katelyn Horstman** and Virginia Trimble. “A citation history of measurements of Newtons constant of Gravity”. In: *arXiv e-prints*, arXiv:1811.10556 (Nov. 2018), arXiv:1811.10556. DOI: [10.48550 / arXiv . 1811 . 10556](https://doi.org/10.48550/arXiv.1811.10556). arXiv: [1811 . 10556 \[physics.hist-ph\]](https://arxiv.org/abs/1811.10556).

## Nth author

- [8] Luke Finnerty, Yinzi Xin, Jerry W. Xuan, et al. “True Mass and Atmospheric Composition of the Nontransiting Hot Jupiter HD 143105 b”. In: *AJ* 169.2, 94 (Feb. 2025), p. 94. DOI: [10.3847/1538-3881/ada1d9](https://doi.org/10.3847/1538-3881/ada1d9). arXiv: [2412 . 04552 \[astro-ph.EP\]](https://arxiv.org/abs/2412.04552).
- [9] Luke Finnerty, Yinzi Xin, Jerry W. Xuan, et al. “Water Dissociation and Rotational Broadening in the Atmosphere of KELT-20 b from High-resolution Spectroscopy”. In: *AJ* 169.6, 333 (June 2025), p. 333. DOI: [10.3847/1538-3881/adce02](https://doi.org/10.3847/1538-3881/adce02). arXiv: [2503.01946 \[astro-ph.EP\]](https://arxiv.org/abs/2503.01946).
- [10] Nemanja Jovanovic, Daniel Echeverri, Jacques-Robert Delorme, et al. “Technical description and performance of the phase II version of the Keck Planet Imager and Characterizer”. In: *Journal of Astronomical Telescopes, Instruments, and Systems* 11, 015005 (Jan. 2025), p. 015005. DOI: [10.1117/1.JATIS.11.1.015005](https://doi.org/10.1117/1.JATIS.11.1.015005). arXiv: [2502.01863 \[astro-ph.IM\]](https://arxiv.org/abs/2502.01863).
- [11] Daniel Echeverri, Nemanja Jovanovic, Jacques-Robert Delorme, et al. “Recent upgrades to the Keck Planet Imager and Characterizer”. In: *Ground-based and Airborne Instrumentation for Astronomy X*. Ed. by Julia J. Bryant, Kentaro Motohara, and Joël. R. D. Vernet. Vol. 13096. Society of Photo-Optical

Instrumentation Engineers (SPIE) Conference Series. July 2024, 130962D, p. 130962D. DOI: [10.1117/12.3019085](https://doi.org/10.1117/12.3019085).

- [12] Daniel Echeverri, Jerry W. Xuan, John D. Monnier, et al. “Vortex Fiber Nulling for Exoplanet Observations: First Direct Detection of M Dwarf Companions around HIP 21543, HIP 94666, and HIP 50319”. In: *ApJL* 965.2, L15 (Apr. 2024), p. L15. DOI: [10.3847/2041-8213/ad3619](https://doi.org/10.3847/2041-8213/ad3619). arXiv: [2403.17295 \[astro-ph.EP\]](https://arxiv.org/abs/2403.17295).
- [13] Chih-Chun Hsu, Jason J. Wang, Geoffrey A. Blake, et al. “PDS 70b Shows Stellar-like Carbon-to-oxygen Ratio”. In: *ApJL* 977.2, L47 (Dec. 2024), p. L47. DOI: [10.3847/2041-8213/ad95e8](https://doi.org/10.3847/2041-8213/ad95e8). arXiv: [2411.15117 \[astro-ph.EP\]](https://arxiv.org/abs/2411.15117).
- [14] Chih-Chun Hsu, Jason J. Wang, Jerry W. Xuan, et al. “Rotation and Abundances of the Benchmark Brown Dwarf HD 33632 Ab from Keck/KPIC High-resolution Spectroscopy”. In: *ApJ* 971.1, 9 (Aug. 2024), p. 9. DOI: [10.3847/1538-4357/ad58d3](https://doi.org/10.3847/1538-4357/ad58d3). arXiv: [2405.08312 \[astro-ph.SR\]](https://arxiv.org/abs/2405.08312).
- [15] Jason J. Wang, Dimitri Mawet, Jerry W. Xuan, et al. “The high-contrast performance of the Keck Planet Imager and Characterizer”. In: *Ground-based and Airborne Instrumentation for Astronomy X*. Ed. by Julia J. Bryant, Kentaro Motohara, and Joël. R. D. Vernet. Vol. 13096. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. July 2024, 130961X, p. 130961X. DOI: [10.1117/12.3019114](https://doi.org/10.1117/12.3019114).
- [16] Jerry W. Xuan, Chih-Chun Hsu, Luke Finnerty, et al. “Are These Planets or Brown Dwarfs? Broadly Solar Compositions from High-resolution Atmospheric Retrievals of  $\sim$ 10–30 M  $J_{up}$  Companions”. In: *ApJ* 970.1, 71 (July 2024), p. 71. DOI: [10.3847/1538-4357/ad4796](https://doi.org/10.3847/1538-4357/ad4796). arXiv: [2405.13128 \[astro-ph.EP\]](https://arxiv.org/abs/2405.13128).
- [17] Jerry W. Xuan, Jason Wang, Luke Finnerty, et al. “Validation of Elemental and Isotopic Abundances in Late-M Spectral Types with the Benchmark HIP 55507 AB System”. In: *ApJ* 962.1, 10 (Feb. 2024), p. 10. DOI: [10.3847/1538-4357/ad1243](https://doi.org/10.3847/1538-4357/ad1243). arXiv: [2312.02297 \[astro-ph.SR\]](https://arxiv.org/abs/2312.02297).
- [18] Yapeng Zhang, Jerry W. Xuan, Dimitri Mawet, et al. “Atmospheric Characterization of the Super-Jupiter HIP 99770 b with KPIC”. In: *AJ* 168.3, 131 (Sept. 2024), p. 131. DOI: [10.3847/1538-3881/ad6609](https://doi.org/10.3847/1538-3881/ad6609). arXiv: [2407.20952 \[astro-ph.EP\]](https://arxiv.org/abs/2407.20952).
- [19] Daniel Echeverri, Jerry Xuan, Nemanja Jovanovic, et al. “Vortex fiber nulling for exoplanet observations: implementation and first light”. In: *Journal of Astronomical Telescopes, Instruments, and Systems* 9, 035002 (July 2023), p. 035002. DOI: [10.1117/1.JATIS.9.3.035002](https://doi.org/10.1117/1.JATIS.9.3.035002). arXiv: [2309.06514 \[astro-ph.IM\]](https://arxiv.org/abs/2309.06514).
- [20] Luke Finnerty, **Katelyn Horstman**, Jean-Baptiste Ruffio, et al. “Characterization of hot Jupiter atmospheres with Keck/KPIC”. In: *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*. Vol. 12680. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. Oct. 2023, 1268006, p. 1268006. DOI: [10.1117/12.2677777](https://doi.org/10.1117/12.2677777).

- [21] Yinzi Xin, Jerry W. Xuan, Dimitri Mawet, et al. “On-sky speckle nulling through a single-mode fiber with the Keck Planet Imager and Characterizer”. In: *Journal of Astronomical Telescopes, Instruments, and Systems* 9, 035001 (July 2023), p. 035001. DOI: [10.1117/1.JATIS.9.3.035001](https://doi.org/10.1117/1.JATIS.9.3.035001). arXiv: [2307.11893](https://arxiv.org/abs/2307.11893) [astro-ph.IM].
- [22] Daniel Echeverri, Nemanja Jovanovic, Jacques-Robert Delorme, et al. “Phase II of the Keck Planet Imager and characterizer: system-level laboratory characterization and preliminary on-sky commissioning”. In: *Ground-based and Airborne Instrumentation for Astronomy IX*. Ed. by Christopher J. Evans, Julia J. Bryant, and Kentaro Motohara. Vol. 12184. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. Aug. 2022, 121841W, 121841W. DOI: [10.1117/12.2630518](https://doi.org/10.1117/12.2630518). arXiv: [2210.15915](https://arxiv.org/abs/2210.15915) [astro-ph.EP].
- [23] Jerry W. Xuan, Jason Wang, Jean-Baptiste Ruffio, et al. “A Clear View of a Cloudy Brown Dwarf Companion from High-resolution Spectroscopy”. In: *ApJ* 937.2, 54 (Oct. 2022), p. 54. DOI: [10.3847/1538-4357/ac8673](https://doi.org/10.3847/1538-4357/ac8673). arXiv: [2208.01657](https://arxiv.org/abs/2208.01657) [astro-ph.EP].