

Wenhao (Jerry) Xuan

✉ wxuan@caltech.edu

EDUCATION

Ph.D. in Astrophysics, California Institute of Technology Advisor: Prof. Dimitri Mawet	Expected: June 2025
M. Sc. Astrophysics, California Institute of Technology, USA	June 2023
M.Phil. in Astronomy, University of Cambridge Advisor: Prof. Mark Wyatt Thesis: Constraining 3D orbital architectures in systems with giant planets	Oct 2020
B.A. in Physics, Pomona College Graduated cum laude, GPA: 3.91/4.00	May 2019

OBSERVING TIME & GRANTS

2018A-2024A Keck II (KPIC, NIRC2): co-I, observed for over 20 nights
JWST Cycle 2 GO 3762 (NIRSpec, MIRI) **PI**, \$74,911
2023B Gemini South (IGRINS) **PI**, 16.9 hours
2023B VLT (CRIRES+) **PI**, 12 hours
2023B VLTI (GRAVITY) **PI**, 2 hours

SELECTED PUBLICATIONS

Summary: 20 refereed publications. 6 first author, 3 second author. 509 citations. [ADS](#)

Xuan, W.J., Wang, J., Finnerty, L., et al., 2023, Accepted to ApJ. *Validation of elemental and isotopic abundances in late-M spectral types with the benchmark HIP 55507 AB system*
Xuan, W.J., Wang, J., Ruffio, J.-B., et al., 2022, ApJ, 937, 54. *A Clear View of a Cloudy Brown Dwarf Companion from High-Resolution Spectroscopy*
Xuan, W.J. & Wyatt, M.C., 2020, MNRAS, 497, 2096. *Evidence for a high mutual inclination between the cold Jupiter and transiting super Earth orbiting π Men*
Xuan, W.J., Kennedy, G.M., Wyatt, M.C., Yelverton, B., 2020, MNRAS, 499, 5059. *Mutual inclinations between giant planets and their debris discs in HD 113337 and HD 38529*
Xuan, W.J., Bryan, M.L., Knutson, H.A., Bowler, B.P., Morley, C.V., Benneke, B., 2020, AJ, 159, 97. *A Rotation Rate for the Planetary-mass Companion DH Tau b*
Xuan, W.J., Mawet, D., Ngo, H. et al., 2018, AJ, 156, 156. *Characterizing the Performance of the NIRC2 Vortex Coronagraph at W. M. Keck Observatory*
Finnerty, L., **Xuan, W.J.**, Xin, Y., et al., 2023, Accepted to AJ. *Atmospheric metallicity and C/O of HD 189733 b from high-resolution spectroscopy*
Xin Y., **Xuan, W.J.**, Mawet, D., Wang, J. et al., 2023, JATIS 9(3), 035001. *On-sky speckle nulling through a single-mode fiber with the Keck Planet Imager and Characterizer*
Echeverri, D., **Xuan W.J.**, Jovanovic, N. et al., 2023, JATIS. *Vortex Fiber Nulling for Exoplanet Observations: Implementation and First Light*
Mawet, D., Ruane, G., **Xuan, W.** et al., 2017, ApJ, 838, 92. *Observing Exoplanets with High-dispersion Coronagraphy. II. Demonstration of an Active Single-mode Fiber Injection Unit*

TALKS

Invited

<i>Retrieving Atmospheric Compositions of Directly Imaged Companions with High-Resolution Spectroscopy</i> Cloud Zwei Con Workshop, Ringberg Castle, Bavaria, Germany	Jan 2023
<i>Atmospheric abundances of directly imaged companions from KPIC high-resolution spectroscopy</i> Other Worlds Laboratory Summer Program, Santa Cruz, CA	July 2023
<i>A Clear View of a Cloudy Brown Dwarf Companion from High-Resolution Spectroscopy</i> Max Planck Institute for Astronomy exocoffee, virtual	Nov 2022

<i>Unlocking the Science Potential of Keck Planet Imager and Characterizer (KPIC) Phase II</i>	
Keck Visiting Scholars Program Exit Talk, Waimea, HI	Oct 2022
<i>A Clear View of a Cloudy Brown Dwarf Companion from High-Resolution Spectroscopy</i>	
Ohio State University exoplanet seminar, virtual	March 2022
<i>Ibid.</i>	
American Museum of Natural History Astrophysics seminar, New York, NY	March 2022
<i>Ibid.</i>	
Caltech Planetary Science Seminar, Pasadena, CA	Feb 2022
<i>Constraining 3D orbital architectures in systems with giant planets</i>	
Amaury Triaud's group meeting at University of Birmingham, virtual	Dec 2020
<i>Keck/NIRC2 high-contrast imaging performance & predictions</i>	
2018 Vortex yearly meeting, Liège, Belgium	Aug 2018
<i>A Fiber Injection Unit for Exoplanet Spectroscopy</i>	
1st International Vortex Workshop, Pasadena, CA	Aug 2016
Contributed	
<i>Are These Planets or Brown Dwarfs? Elemental Abundances in the Atmosphere of Substellar Companions</i>	
ExSoCal 2023, Pasadena, CA	Dec 2023
<i>Ibid.</i>	
Keck Science Meeting, Berkeley, CA	Sept 2023
<i>Early Science Results from Phase II of the Keck Planet Imager and Characterization</i>	
Keck Science Meeting, Pasadena, CA	Sept 2022
<i>High resolution spectroscopy of directly imaged exoplanets with KPIC</i>	
Spirit of Lyot (on behalf of KPIC team), Leiden, Netherlands	June 2022
<i>A Clear View of a Cloudy Brown Dwarf Companion from High-Resolution Spectroscopy</i>	
Exoplanets IV Splinter Session, Las Vegas, NV	May 2022
<i>Atmospheric composition of a cloudy brown dwarf companion from high and low resolution spectroscopy</i>	
Keck Science Meeting, San Diego, CA	Sept 2021
<i>Joint retrievals of low- and high-resolution spectra for a cloudy L/T transition brown dwarf companion</i>	
Cloud Nine Con Workshop, virtual	July 2021
<i>Mutual inclinations between giant planets and their debris discs with Hipparcos, Gaia, and radial velocity</i>	
Exoplanets Orbit and Dynamics workshop, virtual	Jan 2021

ADVISING

Aniket Sanghi (Caltech SURF program, UT Austin undergraduate)	2021-2023
Luke Handley (Caltech Astro Peer Mentoring, graduate student)	2023-

SERVICE

Referee for MNRAS (3), ApJ/AJ (2), A&A (1), and Scientific Reports (1)

AWARDS, HONORS AND FELLOWSHIPS

Future Investigators in NASA Earth and Space Science and Technology	2023-2026
Keck Visiting Scholars Program (funded visit from July-Oct 2022)	2022
Caltech Center for Comparative Planetary Evolution Fellow	2021
Phi Beta Kappa	May 2019
Sigma Xi	May 2019
Downing Scholarship (Full scholarship for M.Phil. at Cambridge)	May 2019
The Brackett Prize in Astronomy, Pomona College	May 2019
Tileston Physics Prize, Department of Physics and Astronomy, Pomona College	Nov 2018
Summer Undergraduate Research Fellowship from Caltech	Apr 2016, 2017, 2018