

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>	Jan 2023
Cloud Zwei Con Workshop, Ringberg Castle, Bavaria, Germany	
<i>Atmospheric abundances of directly imaged companions from KPIC high-resolution spectroscopy</i>	July 2023
Other Worlds Laboratory Summer Program, Santa Cruz, CA	
<i>A Clear View of a Cloudy Brown Dwarf Companion from High-Resolution Spectroscopy</i>	Nov 2022
Max Planck Institute for Astronomy exocoffee, virtual	
<i>Unlocking the Science Potential of Keck Planet Imager and Characterizer (KPIC) Phase II</i>	Oct 2022
Keck Visiting Scholars Program Exit Talk, Waimea, HI	
<i>A Clear View of a Cloudy Brown Dwarf Companion from High-Resolution Spectroscopy</i>	March 2022
Ohio State University exoplanet seminar, virtual	
<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>	Dec 2020
Amaury Triaud's group meeting at University of Birmingham, virtual	
<i>Keck/NIRC2 high-contrast imaging performance & predictions</i>	Aug 2018
2018 Vortex yearly meeting, Liège, Belgium	
<i>A Fiber Injection Unit for Exoplanet Spectroscopy</i>	Aug 2016
1st International Vortex Workshop, Pasadena, CA	

Contributed

<i>Are These Planets or Brown Dwarfs? Elemental Abundances in the Atmosphere of Substellar Companions</i>	Dec 2023
ExSoCal 2023, Pasadena, CA	
<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>	Sept 2022
Keck Science Meeting, Pasadena, CA	
<i>High resolution spectroscopy of directly imaged exoplanets with KPIC</i>	June 2022
Spirit of Lyot (on behalf of KPIC team), Leiden, Netherlands	
<i>A Clear View of a Cloudy Brown Dwarf Companion from High-Resolution Spectroscopy</i>	May 2022
Exoplanets IV Splinter Session, Las Vegas, NV	
<i>Atmospheric composition of a cloudy brown dwarf companion from high and low resolution spectroscopy</i>	Sept 2021
Keck Science Meeting, San Diego, CA	
<i>Joint retrievals of low- and high-resolution spectra for a cloudy L/T transition brown dwarf companion</i>	July 2021
Cloud Nine Con Workshop, virtual	
<i>Mutual inclinations between giant planets and their debris discs with Hipparcos, Gaia, and radial velocity</i>	Jan 2021
Exoplanets Orbit and Dynamics workshop, virtual	

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