YUROU LIU

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EDUCATION

YALE UNIVERSTIY — New Haven, CT
B.S. in Physics (Intensive) — Aug 2022 - May 2026 (anticipated)
B.S. in Computer Science
GPA: 3.99

AWARDS AND HONORS

Alexander P. Hixon Fellowship, Yale University, 2025
Summer Undergraduate Research Fellowship, California Institute of Technology, 2024
First-Year Summer Research Fellowship in the Sciences & Engineering, Yale University, 2023

RESEARCH EXPERIENCE

INDIANA UNIVERSITY BLOOMINGTON — Bloomington, IN
Summer Research Student, Department of Astronomy — June 2025 (anticipated)

CALIFORNIA INSTITUTE OF TECHNOLOGY — Pasadena, CA
Summer Research Student, Department of Astronomy — June 2024 - Present

- Performed atmospheric retrievals on CRIRES+ spectra of directly imaged gas giant 2M0249-0557 c and two benchmark brown dwarfs in the β Pictoris moving group
- Developed a nested sampling retrieval code using petitRADTRANS and PyMultiNest to constrain C/O ratio, metallicity, and $^{12}CO/^{13}CO$ isotopologue ratio
- Interpreted retrieved compositions in the context of formation pathways, supporting a star-like formation mechanism for 2M0249-0557 c

Mentored by Dr. Yapeng Zhang, Dr. Jerry Xuan, and Prof. Dimitri Mawet

YALE UNIVERSITY — New Haven, CT
Undergraduate Researcher, Department of Astronomy — June 2023 – March 2025

- Ran N-body simulations with REBOUND and REBOUNDx to model mirrored ZLK migration in binary star systems
- Estimated occurrence rates of double hot Jupiters using the observed distribution of Gaia binaries hosting hot Jupiters
- Quantified the impact of mass and inclination asymmetries on double hot Jupiter formation

Mentored by Dr. Tiger Lu and Prof. Malena Rice

PUBLICATIONS

Liu, Y., Lu, T. and Rice, M., 2025. The Formation of Double Hot Jupiter Systems through von Zeipel–Lidov–Kozai Migration. *ApJ* 986, 103
Liu, Y. and Zhang, Y. In Prep

Lu, T., Tajer, H., Hernandez, D.M., Rein, H., **Liu, Y.** and Rice, M., 2025. Collisional Fragmentation Support in TRACE. *RNAAS* 9, 110

PRESENTATIONS

Emerging Researchers in Exoplanet Science Symposium X — Princeton, NJ, USA
Probing Gas Giant Origins: Chemistry and Isotope Ratios of Substellar Atmospheres in the β Pictoris Young Moving Group — June 2025

246th American Astronomical Society Meeting — Anchorage, AK, USA
Probing Gas Giant Origins: Chemistry and Isotope Ratios of Substellar Atmospheres in the β Pictoris Young Moving Group — June 2025

Boston Area Planetary Science Meeting — Boston, MA, USA
Probing Gas Giant Origins: Chemistry and Isotope Ratios of Substellar Atmospheres in the β Pictoris Young Moving Group — May 2025

The 55th Meeting of the Division of Dynamical Astronomy — Toronto, Canada
The Formation of Double Hot Jupiter Systems Through ZLK Migration — May 2024

POSTERS

New York Area Exoplanet Meeting — New York, NY, USA
Probing Gas Giant Origins: Chemistry and Isotope Ratios of Substellar Atmospheres in the β Pictoris Young Moving Group — May 2025

OBSERVING EXPERIENCE

Palomar Observatory (DBSP): 1 night
Spectroscopy of a Gas Giant Exoplanet in Optical Wavelength

TEACHING EXPERIENCE

YALE UNIVERSTIY — New Haven, CT
Undergraduate Learning Assistant, Department of Physics — Sep 2023 – May 2024
PHYS 261: Intensive Introductory Physics
PHYS 260: Intensive Introductory Physics

SCIENCE COMMUNICATION AND OUTREACH

Contributor and layout editor, Yale Scientific Magazine

- Created original artwork and designed print layouts
- Provided individualized feedback to contributors
- Improved layout designs for publication
- Led layout workshops to train new designers

Workshop leader, Yale Guild of Book Makers

- Taught hands-on workshops in bookbinding