

# YUROU LIU

New Haven, CT • +1 (203) 808-3039 • [yurou.liu@yale.edu](mailto:yurou.liu@yale.edu) • <https://yurouninaliu.github.io> • 0009-0007-9211-2884

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## EDUCATION

### YALE UNIVERSITY

B.S. in Physics (Intensive)  
B.S. in Computer Science  
GPA: 3.99

New Haven, CT  
Aug 2022 - May 2026 (anticipated)

## 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

Summer Research Student, Department of Astronomy

Bloomington, IN  
Jun 2025 (anticipated)

### CALIFORNIA INSTITUTE OF TECHNOLOGY

Summer Research Student, Department of Astronomy

Pasadena, CA  
Jun 2024 - Present

- Performed atmospheric retrievals on CRRES+ spectra of directly imaged gas giant 2M0249-0557 c and two benchmark brown dwarfs in the  $\beta$  Pictoris moving group
- Developed a nested sampling retrieval code using petitRADTRANS and PyMultiNest to constrain C/O ratio, metallicity, and  $^{12}\text{CO}/^{13}\text{CO}$  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

Undergraduate Researcher, Department of Astronomy

New Haven, CT  
Jun 2023 – Mar 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  $\beta$  Pictoris Young Moving Group* Jun 2025  
246<sup>th</sup> American Astronomical Society Meeting Anchorage, AK, USA  
*Probing Gas Giant Origins: Chemistry and Isotope Ratios of Substellar Atmospheres in the  $\beta$  Pictoris Young Moving Group* Jun 2025  
Boston Area Planetary Science Meeting Boston, MA, USA  
*Probing Gas Giant Origins: Chemistry and Isotope Ratios of Substellar Atmospheres in the  $\beta$  Pictoris Young Moving Group* May 2025  
The 55<sup>th</sup> 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  $\beta$  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 UNIVERSITY New Haven, CT  
Undergraduate Learning Assistant, Department of Physics Sep 2023 – May 2024  
PHYS 261: Intensive Introductory Physics  
PHYS 260: Intensive Introductory Physics

## MEDIA

Yale News, [“New study offers a double dose of ‘hot Jupiters’”](#) Jun 2025  
StarXiv, [“Episode 11: Whirling planes, wandering black holes and alien supernovae”](#) May 2025

## 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