

# Yanbo Pan

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## Education

<b>University of Virginia</b>   Charlottesville, VA	August 2025 –
PhD in Astronomy	
<b>University of Michigan</b>   Ann Arbor, MI	August 2022 – May 2025
Bachelor of Science: Astronomy & Astrophysics (with High Honors), Statistics, Interdisciplinary Physics	GPA 4.0/4.0
<b>University of Wisconsin</b>   Madison, WI	September 2021 – May 2022
GPA 4.0/4.0	

## Publications

1. Fournier-Tondreau, M., **Pan, Y.**, et al., 2025, Transmission spectroscopy of WASP-52 b with JWST NIRISS: water and helium atmospheric absorption, alongside prominent star-spot crossings, MNRAS
2. **Pan, Y.**, et al., A Comprehensive Atmospheric Retrieval Analysis for the Hot Jupiter WASP-52 b from JWST NIRSpec G395H Transmission Spectroscopy (in prep)

## Honors & Awards

Provost's Fellowship, University of Virginia	2025-2030
Dorrit Hoffleit Undergraduate Research Scholarship, Yale University	2024
ERES IX Conference Travel Funds, Cornell University	2024
James B. Angell Scholar, University of Michigan	2023-2025
University Honors, University of Michigan	2022-2025
Dean's List, University of Wisconsin	2021-2022

## Talks

<b>Student Astronomical Society Outreach Talk, University of Michigan, MI</b>	April 2025
Dwarf Galaxies: Hidden Gems in Our Cosmic Neighborhood	
<b>AAS 245, National Harbor, MD</b>	January 2025
Exploring the Chemical Recipes of a Hot Jupiter Behind the Shade of Spotty Starlight	
<b>Summer Research Symposium, Yale University, CT</b>	July 2024
Riding Two Dark Horses: A Spectroscopic Study of Ultra-faint Milky Way Satellites	
<b>ERES IX, Cornell University, NY</b>	July 2024
The Effect of Stellar Features on Atmospheric Retrievals of WASP-52b's Transmission Spectrum	
<b>Physics 391 Research Talk, University of Michigan, MI</b>	October 2023
The Missing Satellite Problem	
<b>Student Astronomical Society Research Talk, University of Michigan, MI</b>	September 2023
Modelling Binary Orbits in the WIYN Open Cluster Survey - The alternative evolutionary tracks for binary stars	

## Posters

<b>AAS 244, Madison, WI</b>	June 2024
Modelling Binary Orbits in the WIYN Open Cluster Survey	
<b>Undergraduate Research Fair, University of Michigan, MI</b>	April 2024
Mining Ultra-Faint Galaxies in the Local Group: Are Missing Satellites All Found?	
<b>Undergraduate Research Fair, University of Michigan, MI</b>	April 2023
Uncovering Ultra-Faint Galaxies in the Local Group	

## Astronomy Data Science Skills

<b>Proficient:</b>	Python, R, Markdown, Jupyter
<b>Intermediate:</b>	SQL, MESA-web, Cloud Computing, Unix Shell, LaTeX, WSL
<b>Familiar:</b>	C++, HTML, Docker, MATLAB, DS9
<b>Datasets:</b>	<b>DECam</b> Local Volume Exploration Survey (DELVE) <b>WIYN</b> Open Cluster Survey (WOCS) <b>JWST</b> Transmission Spectra (NIRISS & NIRSpec) <b>Keck</b> DEIMOS Spectra
<b>Packages:</b>	pandas, numpy, matplotlib, seaborn, scikit-learn, PyTorch, TensorFlow, scipy, sqlite3, emcee, pymultinest, pymc3, theJoker, POSEIDON, ezpadova, gala, fitsio, astroquery

## Research

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### Research Interests:

Observational Near-Field Cosmology; Dwarf Galaxies; Stellar Dynamics; Hot Jupiter Atmospheric Characterization; Statistical and Computational Applications on Astrophysics

### Undergraduate Research, Astronomy Department | University of Michigan, MI

January 2024 – Present

Research Assistant (Advisor: Ryan J. MacDonald)

- Analyzed the multidimensional atmosphere of a Hot Jupiter, WASP-52b, using JWST Cycle 2 transit data
- Measured the chemical composition, temperature, and cloud properties on each side of the planet
- Assessed the transit light source effect of stellar features on the planet's transmission spectrum

### Undergraduate Research, Astronomy Department | Yale University, CT

May 2024 – August 2024

Dorrit Hoffleit Scholar (Advisor: Marla Geha)

- Characterized stellar kinematics in two ultra-faint dwarf galaxies using Keck DEIMOS spectroscopy data
- Calculated ultra-faint dwarf galaxies' dynamical masses based on selected member stars
- Presented research results at the Yale Summer Research Symposium

### Undergraduate Research, Astronomy Department | UW-Madison, WI

June 2023 – June 2024

Research Assistant (Advisor: Robert D. Mathieu)

- Simulated binary stars' orbit to analyze stellar populations within the WIYN Open Cluster Survey
- Designed and tested rejection and MCMC sampling to model stellar orbits, reducing observing demands
- Presented research iPoster at the 244<sup>th</sup> AAS conference

### Undergraduate Research, Astronomy Department | University of Michigan, MI

January 2023 – May 2024

Research Assistant (Advisor: Eric F. Bell)

- Applied unsupervised machine learning techniques to search for potential ultra-faint dwarf galaxies
- Recovered 10 M31 satellite galaxies in the DECam Local Volume Exploration Survey DR2 footprint
- Presented research findings at the Astronomy department's annual undergraduate poster fair

### Science Communication & Public Outreach

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Undergraduate mentor of the Student Astronomical Society (SAS) UFD group

Undergraduate co-representative of the Astronomy DEI committee

Guest writer of the Astrobites Undergraduate Research Series

Volunteer tutor @ the Greater University Tutoring Service (GUTS)

Community speaker of the Chinese New Year Show @ the U-M Planetarium and Dome Theater

Scientific blogger @ zhihu.com

Active member of Badger Acts of Kindness

Travel agent summer intern @ China CYTS Tours Holding Co., Ltd

### Professional Experience

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#### Mrover | University of Michigan, MI

September 2022 – May 2023

Member of the Astrobiology Team

- Developed 5 quantitative chemical tests to analyze soil and rock samples for signs of extinct and extant life
- Collaborated with the Instrumentation & Sample Handling team to make chemical tests work in real-time onboard rover for the annual University Rover Challenge

#### The L.R. Ingersoll Physics Museum | UW-Madison, WI

September 2021 – April 2022

Museum Docent

- Clarified demonstrations, point out overlooked features, and offer further details about special exhibits
- Conducted lab-escape and held open-house events during the Wisconsin Science Festival

#### The Jingrui Academy of Science | Ningbo, China

June 2021 – August 2022

Part-time Tutor

- Crafted study materials, handouts, and quizzes by surveying students' perceptions of past exams
- Tutored one-on-one and group tutoring instruction for over 20 students focusing on academic skills
- Advised IB students in grades 10 through 12, helping to develop math, physics, and economics knowledge

### Miscellaneous

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**Languages:** Chinese, English

**Hobby:** Distance Running, Swimming, Hiking, Table Tennis, Snow Watching, Elephant Chess