

# Yanbo Pan

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## RESEARCH INTERESTS

Observational Near-Field Cosmology; Dwarf Galaxies; Stellar Dynamics; Stellar Populations; Large Sky Surveys; Computational and Machine Learning Applications in Astrophysics, Astrostatistics

## EDUCATION

• <b>University of Virginia</b> <i>PhD in Astronomy</i>	2025 – 2030 (Expected) Charlottesville, VA
• <b>University of Michigan</b> <i>Bachelor of Science: Astronomy &amp; Astrophysics (with High Honors), Statistics, Interdisciplinary Physics</i> ◦ GPA: 3.99/4.00 (High Distinction)	2022-2025 Ann Arbor, MI
• <b>University of Wisconsin</b> <i>Physics &amp; Astronomy</i> ◦ GPA: 4.00/4.00	2021-2022 Madison, WI

## HONORS & AWARDS

1. Provost's Fellowship, University of Virginia (\$32,500)	2025–2030
2. University Graduate Fellowship, Penn State University (Declined)	2025
3. Homer F. Braddock/Nellie H. and Oscar L. Roberts Fellowship, Penn State University (Declined)	2025
4. Jerome and Isabella Karle Physical Sciences Award, University of Michigan (\$2,000)	2025
5. Outstanding Undergraduate Major Award, Department of Statistics, University of Michigan	2025
6. Graduation Speaker, Department of Statistics, University of Michigan	2025
7. Dorrit Hofflein Undergraduate Research Scholarship, Yale University (\$4,600)	2024
8. ERES IX Conference Travel Award, Cornell University (\$500)	2024
9. James B. Angell Scholar, University of Michigan	2023–2025
10. University Honors, University of Michigan	2022–2025
11. Dean's List, University of Wisconsin	2021–2022

## PUBLICATIONS

C=CONFERENCE, J=JOURNAL, P=IN PREP, T=THESIS

- [J.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*.
- [P.1] Pan, Y., et al. (2025). JWST MEP - A World Under Spotty Starlight: Detection of CO<sub>2</sub> and H<sub>2</sub>O in the Hot Saturn WASP-52b with JWST NIRSpec G395H. (In Prep).
- [C.1] Pan, Y., MacDonald, R., JWST GTO 1201 Team, & JWST GO 3969 Team. (2025). **Atmospheric Forecast for the Hot Jupiter WASP-52b: Exploring the Chemical Recipes of a Hot Jupiter Behind the Shade of Spotty Starlight.** In *American Astronomical Society Meeting Abstracts* (Vol. 245, p. 316.02).
- [C.2] Pan, Y., Linck, E., & Mathieu, R. (2024). **Modeling Binary Orbits in the WIYN Open Cluster Survey.** In *American Astronomical Society Meeting Abstracts* (Vol. 244, p. 101.02).
- [C.3] Anguiano, B., Mazzola, C., Dixon, D., Linck, E., Nine, A., Motherway, E., Pan, Y., et al. (2024). **A Systematic Search for and Characterization of White Dwarf Binaries Across the H-R Diagram.** In *American Astronomical Society Meeting Abstracts* (Vol. 244, p. 108.07).

## SCIENCE TALKS

UVa Astronomy Journal Club, Charlottesville, VA	December 2025
JWST MEP - A World Under Spotty Starlight: Atmospheric Forecast for the Hot Jupiter WASP-52b	
AAS 245, National Harbor, MD	January 2025
Exploring the Chemical Recipes of a Hot Jupiter Behind the Shade of Spotty Starlight	
Yale Summer Research Symposium, New Haven, CT	July 2024
Riding Two Dark Horses: A Spectroscopic Study of Ultra-faint Milky Way Satellites	
ERES IX @ Cornell, Ithaca, NY	July 2024
The Effect of Stellar Features on Atmospheric Retrievals of WASP-52b's Transmission Spectrum	
Student Astronomical Society Research Talk, Ann Arbor, MI	September 2023
Modelling Binary Orbits in the WIYN Open Cluster Survey - The alternative evolutionary tracks for binary stars	

## POSTERS

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

## RESEARCH EXPERIENCES

Graduate Research, Astronomy Department   University of Virginia, VA <i>Research Assistant (Advisors: Steve Majewski &amp; Nitya Kallivayalil)</i> Chemo-dynamical analysis of resolved stellar populations in Sagittarius Dwarf Galaxy using Gaia EDR3	2025 – Present
Undergraduate Research, Astronomy Department   University of Michigan, MI <i>Research Assistant (Advisor: Ryan MacDonald)</i> Multidimensional atmosphere analysis of WASP-52b using JWST Cycle 2 NIRISS & NIRSpec transmission spectra	2024 – Present
Undergraduate Research, Astronomy Department   Yale University, CT <i>Dorrit Hoffleit Scholar (Advisor: Marla Geha)</i> A spectroscopic study of two ultra-faint Milky Way satellites' dynamics using Keck DEIMOS spectroscopy	2024 Summer
Undergraduate Research, Astronomy Department   UW-Madison, WI <i>Research Assistant (Advisor: Robert Mathieu)</i> Evaluate the potential of the Joker in binary orbit modeling for the WIYN Open Cluster Survey	2023 – 2024
Undergraduate Research, Astronomy Department   University of Michigan, MI <i>Research Assistant (Advisor: Eric Bell)</i> Mining M31 ultra-faint dwarf satellites in the DECam Local Volume Exploration Survey DR2 footprint	2023 – 2024

## OBSERVING EXPERIENCES

APO 3.5m/DSSI	1 night
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## STUDENT MENTORSHIP

James McDowell (Binary orbits modeling; UW-Madison)	2025
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## OUTREACH TALKS

Graduation Remarks, Department of Statistics, Ann Arbor, MI From Statistical Toolbox to the Expanding Universe	May 2025
Student Astronomical Society Outreach Talk, Ann Arbor, MI Dwarf Galaxies: Hidden Gems in Our Cosmic Neighborhood	April 2025
Year of the Dragon Planetarium Talk, Ann Arbor, MI The Great Race - The Origin of the Chinese Zodiac	February 2024
University of Michigan Physics 391 Talk, Ann Arbor, MI The Missing Satellite Problem	October 2023

## SCIENCE COMMUNICATION & PUBLIC OUTREACH

Doghouse telescope operator @ UVa McCormick Observatory
Graduate reviewer for ASPIRE program @ UVa
Undergraduate mentor of the U-M Student Astronomical Society (SAS) UFD group
Undergraduate co-representative of the U-M Astronomy Climate 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

## ASTRONOMY DATA SCIENCE SKILLS

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- **Proficient:** Python, R, Markdown, Jupyter, L<sup>A</sup>T<sub>E</sub>X
- **Intermediate:** SQL, MESA-web, Cloud Computing, Unix Shell, WSL, Version Control
- **Familiar:** C++, HTML/CSS, Docker, MATLAB, DS9
- **Datasets:** DECam Local Volume Exploration Survey (DELVE), ESA - Gaia, WIYN Open Cluster Survey (WOCS), JWST Transmission Spectra (NIRISS & NIRSpec), Keck DEIMOS Spectra
- **Packages:** pandas, numpy, matplotlib, seaborn, scikit-learn, PyTorch, TensorFlow, scipy, sqlite3, emcee, pymultinest, pymc3, theJoker, POSEIDON, eZpadova, gala, fitsio, astropy, astroquery

## PROFESSIONAL EXPERIENCES

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- **Member of the Astrobiology Team** 2022 - 2023  
*Mrover | University of Michigan, MI* [🌐]
  - Developed chemical tests for life detection and collaborated on implementation for the University Rover Challenge
- **Museum Docent** 2021 - 2022  
*The L.R. Ingersoll Physics Museum | UW-Madison, WI* [🌐]
  - Facilitated physics demonstrations and conducted educational events during the Wisconsin Science Festival
- **Part-time Tutor** 2021 - 2022  
*The Jingrui Academy of Science | Ningbo, China*
  - Provided academic tutoring in math, physics, and economics to IB students through customized instruction

## MISCELLANEOUS

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**Languages:** Chinese, English

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