

# Yanbo Pan

+1-608-960-5479 | [war8sk@virginia.edu](mailto:war8sk@virginia.edu) | <https://yanbopanpi.github.io>

 [LinkedIn](#) |  [yanbopanpi](#) |  [ORCID](#)  
530 McCormick Road | Charlottesville, VA, 22904

## RESEARCH INTERESTS

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

## EDUCATION

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

## HONORS & AWARDS

1. Provost's Fellowship, University of Virginia (\$32,500) 2025–2030
2. Double Hoo Award, University of Virginia (\$6,000) 2026
3. University Graduate Fellowship, Penn State University (Declined) 2025
4. Homer F. Braddock/Nellie H. and Oscar L. Roberts Fellowship, Penn State University (Declined) 2025
5. Jerome and Isabella Karle Physical Sciences Award, University of Michigan (\$2,000) 2025
6. Outstanding Undergraduate Major Award, Department of Statistics, University of Michigan 2025
7. Graduation Speaker, Department of Statistics, University of Michigan 2025
8. Dorrit Hoffleit Undergraduate Research Scholarship, Yale University (\$4,600) 2024
9. ERES IX Conference Travel Award, Cornell University (\$500) 2024
10. James B. Angell Scholar, University of Michigan 2023–2025
11. University Honors, University of Michigan 2022–2025
12. 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

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

## RESEARCH EXPERIENCES

<b>Graduate Research, Astronomy Department   University of Virginia, VA</b> <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
<b>Undergraduate Research, Astronomy Department   University of Michigan, MI</b> <i>Research Assistant (Advisor: Ryan MacDonald)</i> Multidimensional atmosphere analysis of WASP-52b using JWST Cycle 2 NIRISS & NIRSpec transmission spectra	2024 – Present
<b>Undergraduate Research, Astronomy Department   Yale University, CT</b> <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
<b>Undergraduate Research, Astronomy Department   UW-Madison, WI</b> <i>Research Assistant (Advisor: Robert Mathieu)</i> Evaluate the potential of theJoker in binary orbit modeling for the WIYN Open Cluster Survey	2023 – 2024
<b>Undergraduate Research, Astronomy Department   University of Michigan, MI</b> <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

<b>Astronomy on Tap</b> , Charlottesville, VA Hard-to-Find Cosmic Seasoning in Our Galactic Boiling Soup	January 2026
<b>Graduation Remarks, Department of Statistics</b> , Ann Arbor, MI From Statistical Toolbox to the Expanding Universe	May 2025
<b>Student Astronomical Society Outreach Talk</b> , Ann Arbor, MI Dwarf Galaxies: Hidden Gems in Our Cosmic Neighborhood	April 2025
<b>Year of the Dragon Planetarium Talk</b> , Ann Arbor, MI The Great Race - The Origin of the Chinese Zodiac	February 2024
<b>University of Michigan Physics 391 Talk</b> , 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,  $\LaTeX$
- **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