

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

- 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

- Provost's Fellowship, University of Virginia (\$32,500) 2025–2030
- University Graduate Fellowship, Penn State University (Declined) 2025
- Homer F. Braddock/Nellie H. and Oscar L. Roberts Fellowship, Penn State University (Declined) 2025
- Jerome and Isabella Karle Physical Sciences Award, University of Michigan (\$2,000) 2025
- Outstanding Undergraduate Major Award, Department of Statistics, University of Michigan 2025
- Graduation Speaker, Department of Statistics, University of Michigan 2025
- Dorrit Hoffleit Undergraduate Research Scholarship, Yale University (\$4,600) 2024
- ERES IX Conference Travel Award, Cornell University (\$500) 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

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 CO₂ and H₂O 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 & 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 theJoker 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

- **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

- **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

Languages: Chinese, English

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