Yanbo Pan

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Education

University of Virginia | Charlottesville, VA	August 2025 –
PhD in Astronomy	
University of Michigan | Ann Arbor, MI	August 2022 – May 2025
Bachelor of Science: Astronomy & Astrophysics (with High Honors), Statistics, Interdisciplinary Physics	GPA 3.99/4.0
University of Wisconsin | Madison, WI	September 2021 – May 2022
Physics & Astronomy	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
Jerome and Isabella Karle Physical Sciences Award, University of Michigan	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	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

Science Talks

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

Outreach Talks

Graduation Remarks, Department of Statistics, University of Michigan, MI	May 2025
From Statistical Toolbox to the Expanding Universe	
Student Astronomical Society Outreach Talk, University of Michigan, MI	April 2025
Dwarf Galaxies: Hidden Gems in Our Cosmic Neighborhood	
Physics 391 Talk, University of Michigan, MI	October 2023
The Missing Satellite Problem	

Posters

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

Research

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 244th 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

Astronomy Data Science Skills

Proficient:	Python, R, Markdown, Jupyter
Intermediate:	SQL, MESA-web, Cloud Computing, Unix Shell, LaTex, WSL
Familiar:	C++, HTML, Docker, MATLAB, DS9
Datasets:	**DECam** Local Volume Exploration Survey (DELVE)
	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

Science Communication & Public Outreach

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

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

Languages: Chinese, English
Hobby: Distance Running, Swimming, Hiking, Table Tennis, Snow Watching, Elephant Chess