

Yanbo Pan

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https://yanbopanpi.github.io/yanbo_pan.github.io/

Education

University of Michigan | Ann Arbor, MI August 2022 – May 2025

Bachelor of Science: Astronomy & Astrophysics (Highest Honors), Statistics, Interdisciplinary Physics GPA 4.0/4.0

Courses Highlights: *Galaxies, Stars, Exoplanets, Data Science for Astrophysicists, Computational Astrophysics, Astronomical Techniques, Modern Physics, Theoretical Statistics, Applied Regression, Deep Learning*

Involvements: Mrover, Student Astronomical Society, MUgSS, Transfer Connections

University of Wisconsin | Madison, WI

September 2021 – May 2022

GPA 4.0/4.0

Involvements: Greenhouse Learning Community, Greater University Tutoring Drop-in, Badger Acts of Kindness

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 (submitted)
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

Dorrit Hoffleit Undergraduate Research Scholarship, Yale University 2024

ERES IX Conference Travel Funds, Cornell University 2024

James B. Angell Scholar, University of Michigan 2024

University Honors, University of Michigan 2022-2024

Dean's List, University of Wisconsin 2021-2022

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

Physics 391 Research Talk, University of Michigan, MI October 2023

The Missing Satellite Problem

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

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

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, scipy, sqlite3, emcee, pymultinest, pymc3
theJoker, POSEIDON, ezpadova, gala, fitsio, astroquery

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

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