Yanbo Pan

1085 S. University Ave | Ann Arbor, MI, 48109 | panpi@umich.edu | (608) 960-5479
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, Water and Helium Absorption in the JWST NIRISS Transmission Spectrum of WASP-52 b, along with notable starspot-crossing events, MNRAS (submitted)
2. **Pan, Y.**, et al., Comprehensive Retrieval Study of WASP-52b: Exploring the Chemical Recipes of a Hot Jupiter Behind the Shade of Spotty Starlight (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, astropy, 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