Yanbo Pan

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Education

University of Michigan | Ann Arbor, MI August/2022 – May/2025
Bachelor of Science: Astronomy & Astrophysics, Interdisciplinary Physics, Statistics
University Honors: GPA 4.0/4.0
Relevant Courses: *Exoplanets, Galaxies, Modern Astronomical Techniques, Methods in Theoretical Physics*
Probability, Theoretical Statistics, Applied Linear Regression
Data Science Programming, Differential Equations, Linear Algebra,
Introductory Physics (5 semesters), Academic Writing
Involvements: Mrover, Student Astronomical Society, Transfer Connections

University of Wisconsin-Madison | Madison, WI
Attended September/2021 – May/2022
Dean's List: GPA 4.0/4.0
Involvements: Greenhouse Learning Community, Greater University Tutoring Drop-in, Badger Acts of Kindness

Research Experience

Research Interests:
Cosmological archeology by searching for ultra-faint dwarf (UFD) galaxies near M31
Alternative evolution pathways for binary stars by orbit modeling
Hot Jupiter atmospheric retrieval

Undergraduate Research, Astronomy Department | University of Michigan, MI January/2024 – Present
Research assistant (Advisor: Ryan J. MacDonald)
- Analyze the multidimensional atmosphere of a Hot Jupiter, WASP-52b, with JWST Cycle 2 data
- Model differences between the east and west sides of the planet
- Measure the chemical composition, temperature, and cloud properties on each side of the planet

Undergraduate Research, Astronomy Department | University of Wisconsin, WI June/2023 – Present
Research assistant (Advisor: Robert D. Mathieu)
- Simulate binary stars' orbit to analyze stellar populations within the WIYN open cluster survey
- Design and test MCMC algorithms to modal stellar orbits, reducing observing demands for the Apogee project
- Present research results at the American Astronomical Society (*Planned 2024 summer*)

Undergraduate Research, Astronomy Department | University of Michigan, MI January/2023 – Present
Research assistant (Advisor: Eric F. Bell)
- Detect ultra-dwarf satellite galaxies of M31 to understand dark matter distribution in the local group
- Code cluster detecting algorithms to verify the existence of known ultra-dwarf galaxies using Python packages
- Showcase research findings at the Astronomy department's annual undergraduate poster fair and the American Astronomical Society (*Planned 2025 Winter*)

Talks, Posters & Presentations

2025
AAS 245 (*Planned 2025 Winter*)
Uncovering Ultra-Faint Galaxies in the Local Group

2024
AAS 244 (*Planned 2024 summer*)
Modelling Binary Orbits in the WIYN Open Cluster Survey - The alternative evolutionary tracks for binary stars.

2023
University of Michigan Physics 391 Research Talk (Oct)
The Missing Satellite Problem

University of Michigan Student Astronomical Society Research Talk (Sep)
Modelling Binary Orbits in the WIYN Open Cluster Survey - The alternative evolutionary tracks for binary stars.

University of Michigan Undergraduate Research Fair (Apr)
Uncovering Ultra-Faint Galaxies in the Local Group

Relevant Experience

Mrover | University of Michigan, MI September/2022 – May/2023
Member (astrobiology team)

- Develop 5 quantitative chemical tests to analyze soil and rock samples for signs of extinct and extant life
- Collaborate 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

- Build detailed knowledge of Physics and locations to thoroughly answer guest questions
- Clarify demonstrations, point out overlooked features, and offer further details about special exhibits
- Conduct lab-escape with UIUC and held open-house events during the Wisconsin Science Festival

The Jingrui Academy of Science | Ningbo, China June/2021 – Aug/2022
Part-time Tutor

- Craft study materials, handouts, and quizzes by surveying students' perceptions of past exams
- Tutor one-on-one and group tutoring instruction for over 20 students focusing on academic skills
- Advise IB students in grades 10 through 12, helping to develop math, physics, and economic knowledge

Outreach

Undergraduate mentor of the Student Astronomical Society (SAS) UFD interest group
Volunteer tutor @ the Greater University Tutoring Service (GUTS) for one semester
Active member of Badger Acts of Kindness
Scientific blogger @ zhihu.com
Travel agent summer intern @ China CYTS Tours Holding Co., Ltd

Computational Skills

Proficient: Python & R & Jupyter
Intermediate: MySQL & Cloud Computing & Unix Shell & LaTex
Basic: MATLAB & C++ & DS9

Datasets: DECam Local Volume Exploration Survey (DELVE)
WIYN Open Cluster Survey (WOCS)
JWST Cycle 2 Program

Personal

Languages: Mandarin Chinese (Native / Bilingual)
Hobby: Distance Running, Table Tennis, Elephant Chess