Adam Distler
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About Me

I am a recent graduate of the University of Wisconsin-Madison with my B.S. majoring in Astronomy-Physics and Mathematics. I currently perform research in both of these subjects, with a plan to attend graduate school in Astronomy/Physics in the Fall of 2025. Currently, I perform astronomy research in multiple fields, including exoplanet detection and characterization, orbital dynamics and evolution, and fates of compact objects. My math research consists of work in numerical and theoretical fluid dynamics for the Cahn-Hilliard-Navier-Stokes equations.

Education

Harvard University: September 2025 - Present
Incoming PhD Student in Astronomy

University of Wisconsin-Madison: September 2022 - May 2024
Bachelor's of Science in Mathematics and Astrophysics
GPA: 4.0/4.0
Dean's List Fall 2022, Spring 2023, Fall 2023, Spring 2024

University of Minnesota-Twin Cities: January 2021 - May 2022
State of Minnesota Post Secondary Enrollment Options
GPA: 4.0/4.0
Dean's List Fall 2021

Century College: August 2020 - May 2022
State of Minnesota Post Secondary Enrollment Options
GPA: 4.0/4.0
Dean's List Fall 2020, Spring 2021, Spring 2022

Experience

Research Intern; UW-Madison Astronomy Department May 2024 - Present
Mentor: Prof. Melinda Soares-Furtado
Year-long paid position working with Dr. Melinda Soares-Furtado to perform astronomy research. Currently, I have led and submitted a first-author publication in exoplanet detection in the Hyades, where we characterized the stellar properties of the host star along with the orbital and physical parameters of the mini-Neptune that orbits it. I worked with data from TESS, astrometry information from Gaia, follow-up ground-based photometry, and spectra obtained from TRES and ESPRESSO. As a young ($\approx$ 700 Myr) exoplanet whose host is also a Hyades member and an M dwarf, this could prove to be a very exciting follow-up candidate for atmosphere characterization to understand how these budding worlds develop.

Mathematics Researcher; UW-Madison Math Department May 2024 - Present
Mentor: Dr. Yukun Yue
A continuation of my work in the Madison Experimental Mathematics Lab (MXM). Using the numerical scheme that we developed for the Cahn-Hilliard-Navier-Stokes, I am leading a first-author publication on proving the

energy stability and showing the convergence of our scheme in the semi-discrete case. After this project, I plan to expand this by proving this scheme for a fully discrete Hybridized Discontinuous Galerkin (HDG) method.

Astronomy Researcher; UW-Madison Astronomy Department September 2024 - Present
Mentor: Prof. Juliette Becker
Recently started assisting Professor Becker on refining constraints for a system exhibiting transit timing variations (TTVs), with a goal of observing the Rossiter-McLaughlin effect to measure the spin-orbit alignment. To best constrain the ephemeris, I am the PI of a CHEOPS proposal to perform follow-up photometry.

Astronomy Researcher; UW-Madison Astronomy Department November 2024 - Present
Mentor: Prof. Nick Stone
Recently began a new project on investigating extreme-mass-ratio-inspirals (EMRIs) of compact objects (neutron stars, stellar-mass black holes) into super-massive black holes. Due to the strength of the gravitational waves emitted by this effect, future facilities such as the Laser Interferometer Space Antenna (LISA) will be able to detect these events, so understanding the behavior and overall frequency of these events is crucial. I am planning to work on numerical simulations detailing this behavior and how strong scattering impacts the end fate of the compact object.

Lead Tutor and Course Assistant; UW-Madison - Math Learning Center January 2024 - May 2024
Supervisor: Dr. Tracii Friedman
A new role where I served as a shift supervisor for other tutors. Duties included hosting training sessions for 5-8 tutors about effective education and tutoring along with communicating with Dr. Friedman about ways to improve the support provided. I also worked as a course assistant for MATH 320 - Linear Algebra and Differential Equations, where I held small group meetings multiple times weekly to go through course material.

Undergraduate Researcher; UW-Madison Astronomy Department December 2023 - May 2024
Worked with Prof. Soares-Furtado to determine membership in the Ursa Major moving group. Tasks were data collection, organization, and analysis. I took part in proposal writing and editing, and our fall proposal to the Southern African Large Telescope (SALT) was ranked among the best. I began work on a pipeline in Python that would be more accessible than the current version in IDL. This pipeline will provide the necessary radial velocity values that are needed to determine membership through spectroscopic data obtained from the Southern African Large Telescope (SALT).

Undergraduate Researcher; Madison Experimental Mathematics Lab August 2023 - May 2024
Mentor: Dr. Yukun Yue, Van Vleck Associate Professor of Mathematics
Undergraduate member of the Madison Experimental Mathematics Lab (MXM) and worked on finding numerical solutions to gradient flow problems. We worked on a numerical scheme for the Cahn-Hilliard-Navier-Stokes equations, by implementing both projection and Scalar Auxiliary Variable methods.

Research Assistant; University of Missouri-Columbia May 2023 - July 2023
Mentor: Prof. Mahmoud Almasri, Associate Professor of Electrical Engineering and Computer Science
Participated in an REU (Research Experiences for Undergraduates) program at the University of Missouri focused on improving Infrared Detectors by using Silicon-Germanium-Oxide thin films. Lab work consisted of IV testing, using a cryostat to measure the Temperature Coefficient of Resistance, and doing noise testing on the films.

Math Tutor and Peer Mentor; UW-Madison - Math Learning Center October 2022 - January 2024
Supervisor: Dr. Tracii Friedman
Worked for the Math Department on tutoring students in mathematics. Tutored in both lecture halls and smaller study groups to help students in Precalculus, Calculus I/II/III, Discrete Math, and Linear Algebra/Differential Equations. Currently also a peer mentor for MATH320-Linear Algebra and Differential Equations, which involves setting aside specific office hours to help students in both the regular and honors section of this course. Tasks consisted of helping with students' current homework problems, reviewing past tests, and creating new problems to further their critical thinking skills.

Papers and Proposals

***TESS* Hunt for Young and Maturing Exoplanets (THYME) XIII: A 130 Myr Moving Group Containing Two Transiting Planetary Systems**
Distler, A. et. al, in prep.

***TESS* Hunt for Young and Maturing Exoplanets (THYME) XII: A Young Mini-Neptune on the Upper Edge of the Radius Valley in the Hyades Cluster**
Distler, A. et. al, Accepted in the Astronomical Journal. ArXiv: https://arxiv.org/abs/2410.11990

The TEMPO Survey II: Science Cases Leveraged from a Proposed 30-Day Time Domain Survey of the Orion Nebula with the Nancy Grace Roman Space Telescope
Soares-Furtado, M., Limbach, M.A., Vanderburg, A., and 26 co-authors including **Distler, A.**, submitted to Space Science Reviews. https://doi.org/10.48550/arXiv.2406.01492

NEID Phase 1 Proposal October 2024
Co-PI on an approved NEID proposal that was awarded 1.9 nights for the 2025 spring semester. We will obtain precision radial velocities for TOI-4364 b with the goal of obtaining a mass measurement for the planet.

CHEOPS Discretionary Programme Proposal October 2024
PI for a program advocating for follow-up photometric observations of a target around a nearby G-type star that is exhibiting signs of transit timing variations. By providing more transits to constrain the solution, we can then obtain a Rossiter-Mclaughlin (RM) measurement to determine the obliquities of the system.

Age-Dating The Most Accessible Astrobiological Targets With Chandra March 2024
Co-Investigator. Recently submitted a proposal for over 500 ks of observing time with Chandra to date objects in preparation for the Habitable Worlds Observatory.

Southern African Large Telescope Phase 1 Proposal February 2024
Co-author. Ranked the top proposal of the cycle and focused on outlining the rationale for the project under Dr. Soares-Furtado and the target selection.

Presentations

245th Meeting of the American Astronomical Society January 12 - 16, 2025
"*TESS* Hunt for Young and Maturing Exoplanets (THYME) XII: A Young Mini-Neptune on the Upper Edge of the Radius Valley in the Hyades Cluster", Adam Distler, Prof. Melinda Soares-Furtado, Prof. Andrew Vanderburg, Chambliss Poster Competition Finalist.

Stellar Observers Hackathon December 9, 2024
Led a Hackathon focused on obtaining radial velocities for a variety of objects, including single stars, binary systems, and white dwarfs. Primarily focused on using SALT data using the radial velocity pipeline I built, and how it can be adapted to other spectrographs and data types.

Emerging Researchers in Exoplanet Sciences July 12-15, 2024
"Hiding in the Hyades: A Mini-Neptune Transiting a Nearby M Dwarf", Adam Distler, Prof. Melinda Soares-Furtado, Prof. Andrew Vanderburg.

2024 SIAM Annual Meeting July 2024
"Numerical Modeling and Convergence Analysis of the Cahn-Hilliard-Navier-Stokes System Using a Combined Scalar Auxiliary Variable and Finite Element Scheme." Sanchita Chakraborty, Adam Distler, Alexis Liu, John Marek, and Yukun Yue.

244th Meeting of the American Astronomical Society June 11-13, 2024
"A Rigorous Age Dating of the Ursa Major Moving Group." Adam Distler, Prof. Melinda Soares-Furtado, Julia Sheffler, and M Clark.

Spring 2024 Madison Experimental Mathematics Lab Open House April 30, 2024
"ANALYSIS OF A NUMERICAL METHOD FOR CAHN-HILLIARD-NAVIER-STOKES." Adam Distler, Alexis Liu, Sanchita Chakraborty, and Yukun Yue.

Madison Undergraduate Symposium April 25, 2024
"Measuring the Milky Way's Rotation Curve." Ella Chevalier, Adam Distler, Alex Geiger, Brooke Kotten, Quinn Meece.

Fall 2023 Madison Experimental Mathematics Lab Open House December 12, 2023
"A Numerical Method for Cahn-Hilliard Navier-Stokes." Adam Distler, John Marek, Alexis Liu, Sanchita Chakraborty, Yukun Yue.

Mizzou Undergraduate Research Forum July 27, 2023
"Optimizing Performance of Silicon-Germanium-Oxide Thin Films for Use in Infrared Detectors." Adam Distler, Farhana Tuli, Mahmoud Almasri.

Relevant Classes

University of Wisconsin-Madison:
Astrophysics: ASTRON699- Directed Study, ASTRON465-Observational Astronomy and Data Analysis, ASTRON310-Stellar Astrophysics, ASTRON 340-Solar System Astrophysics
Physics: PHYS415-Thermal Physics, PHYS322-Electromagnetic Fields, PHYS311-Mechanics, PHYS241-Modern Physics, PHYS531-Introduction to Quantum Mechanics
Math: MATH521-Analysis I, MATH522-Analysis II, MATH541-Modern Algebra, MATH390-MXM Math Undergraduate Research

University of Minnesota-Twin Cities:
Math: MATH4567-Applied Fourier Analysis, MATH3283W-Sequences and Series, MATH2374-Multivariable Calculus and Vector Analysis
Physics: PHYS2201-Introductory Thermodynamics and Statistical Mechanics, ASTRO2001-Introductory Astrophysics

Century College
Physics: PHYS1081-Introductory Physics 1, PHYS1082-Introductory Physics 2
Math: MATH2082-Linear Algebra and Differential Equations
Comp Sci: CSCI1060 - Introduction to Programming with Python

Notable Awards and Recognitions

Academic

- National Science Foundation Graduate Research Fellow
- Peter Livingston Scholar
- Sophomore Research Fellowship Recipient (Declined due to graduation)
- Member of Phi Kappa Phi

Scholarships

- William F. Vilas Scholarship
- Tozer Foundation Scholarship

- Community Scholarship Foundation General Scholarship
- WSTDA Scholarship

Leadership Positions

- Event Coordinator - University of Wisconsin Physics Club — November 2023 - May 2024
- Section Leader - University of Minnesota Campus Orchestra — September 2021-December 2021
