

# NICHOLAS T. MARSTON

Astronomy and Physics Researcher

[Website](#) | [GitHub](#) | [LinkedIn](#)

**Position:** Post-Bacc Reseracher at the University of Wisconsin-Madison

**Research Interests:** Exoplanets, Compact Binary Physics, Observational Stellar Astrophysics

**Methods:** Computational & Numerican Astrophysics, Periodic Analysis, Semi-Analytical Analysis

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## Statement

I'm a recent graduate of the University of Wisconsin-Madison, where I studied Astronomy, Physics, and Scandinavian Studies. I am currently a post-baccalaureate researcher at my alma mater, where I work with Professors Juliette Becker, Nicholas Stone, and Melinda Soares-Furtado. My research projects focus on exoplanet interiors and their thermal evolution, orbital dynamics of compact objects, and AGN disk turbulence.

## Experience

### Post-Baccalaureate Researcher

Prof. Nicholas Stone, University of Wisconsin-Madison

Summer 2025 - present

- Exploring the effects of disk turbulence on compact binary distributions in Active Galactic Nuclei

### Post-Baccalaureate Researcher

Prof. Juliette Becker, University of Wisconsin-Madison

Spring 2025 - Present

- Investigating and evaluate potential explanations for anomalously low density exoplanets
- Computationally modeling the interior structures and thermal evolution of sub-Neptunes

### Undergraduate/Post-Baccalaureate Researcher

Prof. Melinda Soares-Furtado, University of Wisconsin-Madison

Spring 2023 - present

- Analyzing Kepler mission data in combination with Gaia DR3 data to characterize periodicity and other properties of stars in the open cluster NGC 6819.

## Education

### B.S. in Astronomy-Physics, Physics, Scandinavian Studies

University of Wisconsin-Madison

2022-2025

- Certificates in European Studies, Italian

### A.A.S in Cyber Security

Saint Paul College

2018 - 2021

- Graduated with High Distinction

## Publications

### 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., Bally, J., Becker, J., Rosen, A. L., Bouma, L. G., Vos, J. M., Howell, S. B., Beatty, T. G., Best, W. M. J., Cody, A. M., Distler, A., D'Onghia, E., Heller, R., Hensley, B. S., Hinkel, N. R., Jackson, B., Kounkel, M., Kraus, A., Mann, A. W., **Marston, N.**, Robberto, M., Rodriguez, J. E., Steffen, J. H., Teske, J. K., Townsend, R., Yarza, R., Youngblood, A. 2024 *Space Science Reviews* (Submitted)  
<https://doi.org/10.48550/arXiv.2406.01492>

### Kepler Image-Subtracted Light Curves and Variable Star Catalog of NGC 68191

Soares-Furtado, M., Kuenzi, R., McClure, R. L., **Marston, N. T.**, Linck, E., Mathiew, R. M., Vanderburg, A., Hartman, J. D., Cudworth, K., Gagliano, R., Jacobs, T., Kristiansen, M. H., Omohundro, M., Schwengeler, H. M. 2025 (In-Prep)

## Other Scholarly Activities

Penn State Summer School in Statistics for Astronomers	Summer 2025
Code/Astro Software Engineering Workshop for Astronomy (CIERA/Northwestern University)	Summer 2025
2025 Sagan Summer Workshop: Exoplanet Demographics (NExSci)	Summer 2025
Intro to Deep Learning with Keras (UW-Madison Data Science Hub)	Spring 2025
Intensive Italian Language Summer Program (Umbra Institute, Perugia, Italy)	Summer 2024
Intensive Norwegian Language Level III - Oslo International Summer School (Universitetet i Oslo)	Summer 2024

## Awards & Achievements

Foreign Language & Area Studies (FLAS) Fellowship - U.S. Dept. of Education	Summer 2023/2024
The Foreign Language and Area Studies Fellowship is a competitive grant awarded to undergraduate and graduate students funded by the U.S. Department of Education. The grant provides a total of \$8,500 to assist students in acquiring foreign language and either area or international studies competencies. I received this grant to participate in the University of Oslo-International Summer School's high-level intensive Norwegian language course, through which I reached CEFR-B2/C1 (Upper Intermediate/Advanced) fluency. <i>In 2024, I was awarded the fellowship for a second consecutive year</i> to take an advanced Italian language course through the Umbra Institute in Perugia, Italy. Through this course I reached a CEFR-B2 (Upper-intermediate) fluency level	
Named to Dean's List	2025
Presidential Scholarship Recipient - St. Olaf College	2021-2022
Began Studies at St. Olaf College with 101 previously earned credit hours	2021
Named to President's List - Saint Paul College	2019, 2020, 2021
Member of Mu Alpha Theta Mathematics Honor Society - Saint Paul College	2020-2021
AP Scholar Award Recipient	2020
Named to President's List - Saint Paul College	2019
Presidential Scholarship Recipient - St. Olaf College	2021-2022

## Leadership & Community Involvement

### University Physical Society (Physics Club) - UW-Madison

President

Fall 2023 - Spring 2025

- Organization of STEM outreach events, networking events with up to 100 in attendance, GRE preparation seminars, peer-tutoring, collaboration events with the UW-Madison Physics Department, and coordination/facilitation of a group tour/visit to Fermilab's SQMS and Muon g-2
- Organization/Hosting of a faculty lecture series, including contacting and coordinating with guest lecturers.

### Dept. of Astronomy Curriculum Committee - UW-Madison

Undergraduate Representative

Fall 2024 - Spring 2025

- Assisted in restructuring the University of Wisconsin's Astronomy-Physics undergraduate program
- Acted as a liaison between department administration and the undergraduate student body

### Triangle Science & Engineering Fraternity

Information Systems Officer, Health & Wellness Officer

Fall 2022 - Spring 2025

- Maintained and implemented upgrades to a website using HTML and Next.js, managed communications between over 100 active members & alumni
- Collaborated with the End Overdose Organization to host overdose prevention & Naloxone administration training

### UW-Madison Men's Club Ultimate Frisbee

Member

Fall 2022 - Spring 2025

- Consistent high-level play and mentorship

### Saint Olaf Berzerker's Men's Ultimate Frisbee

Member

Fall 2021 - Spring 2022

- 2021 National championship runners-up

### Saint Paul College Math Club

Vice President

Fall 2020 - Spring 2021

- Regional Finalist/National Competitor in the American Mathematical Association of Two-Year Colleges (AM-ATYC) Student Research League
- Participated in and helped to facilitate tutoring, outreach, and club participation in Mu Alpha Theta's Rocket City Math League

# Skills & Courses

## Relevant Coursework

ASTRON 620 Exoplanets	Spring 2025
PHILOS 562 Philosophy of Quantum Mechanics	Spring 2025
PHYS 406 Special Topics: General Relativity	Fall 2024
ASTRON 335 Cosmology	Fall 2024
MATH 561 Differential Geometry	Spring 2024
PHYS 448/449 Atomic & Quantum Physics (Two Semester Sequence)	2023-2034
ASTRON 465 Observational Astronomy Lab	Fall 2023
Abstract Algebra, Number Theory, Real Analysis (Taken at St. Olaf College)	2021-2022

## Technical Skills

### Programming

Python	Expert - 8+ years
- Extensive experience with relevant libraries/tools including Astropy, Astroquery, LightKurve, Pandas, Numpy, Scipy, Multiprocessing, GSpread, Matplotlib, and Seaborn	
Java	Expert - 6+ years
C++/C#	3+ years
Linux & Bash Scripting	3+ years
Git/Version Control	3+ years
ADQL/SQL Query Automation	2+ years

### Selected Research Techniques

- Hands on experience with frequency-space and power spectral analysis
- Lomb-Scargle, Box Least Squares, and other periodogram analysis techniques
- Optical & Radio data processing pipeline development
- Illustris & TNG-50
- Deep Learning & Machine Learning
- Experience working with/contributing to computational modeling codes in C++
- Optimizing simulation codes to significantly decrease time-to-run and resource usage
- Scientific Writing & In-depth literature review

## Languages

English	Native
Norwegian	CEFR-B2/C1 (Fluent)
Italian	CEFR-B2 (Proficient)
Danish	Reading Proficiency
Swedish	Conversational Competence

# Research Advisors / References

**Dr. Melinda Soares-Furtado**  
Assistant Professor  
University of Wisconsin-Madison  
Depts. of Astronomy, Physics  
mmsoares@wisc.edu

**Dr. Juliette Becker**  
Assistant Professor  
University of Wisconsin-Madison  
Dept. of Astronomy  
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**Dr. Nicholas Stone**  
Assistant Professor  
University of Wisconsin-Madison  
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