Nicholas T. Marston

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Education

Bachelor of Science, Astronomy-Physics, Physics, Scandinavian Studies.
Certificates in Italian & European Studies
University of Wisconsin–Madison, Madison, WI
GPA: 3.583/4 2023-2025

St. Olaf College, Northfield, MN
Completed 36 credit hours towards general requirements
GPA: 3.56/4 2021-2022

University of Minnesota–Twin Cities, Minneapolis, MN
Completed 23 credit hours towards general requirements
GPA: 3.90/4 2019-2021

Associate of Applied Science, Cyber Security
Saint Paul College, Saint Paul, MN
Graduated with High Distinction
GPA: 3.87/4 2018-2021

Liberal Arts Diploma
South High School, Minneapolis, MN
GPA: 3.79/4 (Unweighted) 2017-2021

Research Experience

Undergraduate/Post-Baccalaureate Researcher Spring 2023 - Present
University of Wisconsin–Madison
Prof. Melinda Soares-Furtado
Department of Astronomy-Physics
Analyzing Kepler mission data in combination with Gaia DR3 data to characterize periodicity and other properties of stars in the open cluster NGC 6819.

Prof. Juliette Becker
Department of Astronomy-Physics
Utilizing computational methods and existing observations to investigate and evaluate potential explanations for the anomalously low density "super-puff" class of exoplanets.

Undergraduate Research Assistant Winter 2023 - Fall 2024
University of Wisconsin–Madison
Department of Physics
Analysis of accelerometer data pertinent to the IceCube Neutrino Observatory's upgrade project.

Awards & Achievements

Summer FLAS Fellowship Recipient, The Umbra Institute, Perugia, Italy 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 for the second consecutive year to take an advanced Italian language course through the Umbra Institute. Through this course I reached a CEFR-B2 (Upper-intermediate) fluency level.*

Summer FLAS Fellowship Recipient, Universitetet i Oslo(UiO), Oslo, Norway 2023

- *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 take an advanced Norwegian language course at UiO, through which I reached CEFR-B2/C1 (Upper Intermediate/Advanced) fluency.*

Began Studies at St. Olaf College with a total of 101 previously earned credit hours 2021

Presidential Scholarship Recipient, St. Olaf College 2021-2022

American Mathematical Association of Two-Year Colleges (AMATYC) Student Research League 2021

- *Regional Finalist/National Competitor*

Member of Mu Alpha Theta Mathematics Honor Society, Saint Paul College 2020-2021

Named to President's List, Saint Paul College 2021

Named to President's List, Saint Paul College 2020

AP Scholar Award Recipient 2020

Named to President's List, Saint Paul College 2019

Publications & Presentations

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). 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. *Space Science Reviews* (Submitted). https://doi.org/10.48550/arXiv.2406.01492

University & Community Involvement

All Activities Sep-May unless otherwise noted.

Member of the University Physical Society (Physics Club), UW-Madison 2022-2025

Member of Triangle Science & Engineering Fraternity, UW-Madison Chapter 2022-2025

Member of the UW–Madison Men's Ultimate Frisbee Program 2022-2025

Vocal Performance Student. St. Olaf College, UW–Madison 2021-2025

Member of the UW–Madison Chorale Spring 2024

Facilitator of the UW–Madison Norwegian Conversation Table 2023-2024

Employee at The Turtle Bread Company Feb 2019 -Aug 2023
- *Front of House, food service, cleaning and customer service*

Member of St. Olaf Berzerkers Men's Ultimate Frisbee 2021-2022
- *2022 USAU DIII Men's Collegiate National Champion Runner-Up*

Member of the St. Olaf College Powerlifting Club 2021-2022

President of Chess Club, South High School 2020-2021

Member of Saint Paul College Math Club 2018-2021

Habitat for Humanity Build Days — Volunteer 2023, 2024

Free Geek Twin Cities — Volunteer 2017-2020
- *Assembly and Configuration of Computers for equal access community distribution*

Hennepin County Libraries Volunteer Program 2013-2018

Leadership

President of University Physical Society (Physics Club) 2023-2025
- Elected to two year long terms, succeeded in drastically increasing membership and engagement following previous years of decline and risk of losing registered student organization status.
- Facilitation and participation in tutoring
- Organization of STEM outreach events
- Organization of networking events with up to 100 in attendance
- Organization of collaboration events with the Physics Department
- Organization of GRE preparation seminars
- Organization of the first Physics Club-hosted faculty lecture since 2020
- Sole organizer and coordinator of a large group tour visit to Fermilab's SQMS and Muon g-2

Undergraduate Representative to Dept. of Astronomy Curriculum Committee 2024-2025
- Assisted in restructuring the University of Wisconsin's Astronomy-Physics undergraduate program
- Advocated for popular course offerings on behalf of fellow students

Triangle Science & Engineering Fraternity, Health & Wellness Officer 2023-2024
- Collaborated with the End Overdose Organization to host overdose prevention & Naloxone administration training
- Organized and fielded intramural teams
- Organized and facilitated events and activities aimed at promoting the health and wellness of members

Triangle Science & Engineering Fraternity, Information Systems Officer 2023-2024
- Maintained and implemented upgrades to a website using HTML and Next.js
- Maintained a large scale local area network with minimal downtime
- Maintained and facilitated communications systems between over 100 members and alumni

Vice President of Saint Paul College Math Club 2020-2021
- Helped to facilitate and provided drop-in tutoring
- Participated and helped to organize Mathematics outreach events

- Participated in and helped to facilitate participation in Mu Alpha Theta's Rocket City Math League and the American Mathematical Association of Two Year Colleges Student Research League (AMATYC SRL)

Relevant Coursework

Physical Science & Mathematics

- Exoplanets (Graduate Level) - University of Wisconsin-Madison (Spring 2025)
- Philosophy of Quantum Mechanics - University of Wisconsin-Madison (Spring 2025)
- Special Topics Course: General Relativity - University of Wisconsin–Madison (Fall 2024)
- Cosmology - University of Wisconsin–Madison (Fall 2024)
- Differential Geometry - University of Wisconsin–Madison (Spring 2024)
- Atomic and Quantum Physics Full-Year Sequence - University of Wisconsin–Madison (2023-2024)
- Observational Astronomy - University of Wisconsin–Madison (Fall 2023)
- Abstract Algebra - St. Olaf College (Spring 2022)
- Number Theory - St. Olaf College (Winter 2021-2022)
- Real Analysis - St. Olaf College (Fall 2021)

Computer Science

- Introduction to Computer Engineering - University of Wisconsin–Madison (Fall 2023)
- Programming II (300-Level) - University of Wisconsin–Madison (Fall 2022)
- Intro to Data Structures in C++ - St. Olaf College (Spring 2022)

Earned as part of a Cyber Security A.A.S (2018-2021, Saint Paul College)

Only notable coursework included

- Computer Networking - Infrastructure
- Computer Networking - Linux
- Machine Architecture
- Ethical Hacking & Countermeasures
- Computer Security and Penetration Prevention

Skills - Research & Technical

Programming Languages:

- Python (Expert, 7 years experience)
- Java (Advanced)
- C# & C++ (Proficiency)
- OS Scripting (Proficiency)

Languages:

- English - Native
- Norwegian - CEFR-B2/C1 equivalence
- **Italian** - CEFR-B2 equivalence
- Danish - Reading proficiency

- Swedish - Proficient understanding of spoken language

Certifications:

- Microsoft Technology Associate(MTA): Networking Fundamentals, Security Fundamentals(2020)
- Cisco Certified Network Associate(CCNA)(2020).

Experienced in Astropy, Astroquery, and LightKurve Python Libraries

Deep-Learning with Keras, Auto-correlation, Power Spectral Analysis, Fourier Analysis

Experience with Illustris & TNG-50 Modeling

SQL database query automation

FITS file processing

Extensive Python and Java API experience

Advanced Data Structures in high level programming

Data representation using Python, Java

Analysis and Processing of light curves, analysis of periodicity

GIT, Version control software

GAIA Mission data processing

In-depth review of literature

Scientific writing

Scientific communication and presentation

Radio and Optical Telescope data acquisition experience

Wolfram Alpha/Mathematica

Collaborative Research Experience

Introductory Differential Geometry & Applications

Completion of a Two-Semester Sequence in Quantum Mechanics & Atomic Physics

Basic experience in AutoCAD and similar 3-D design software

Interests

- **Habitable Worlds & Exoplanets**
- **Gravitational Wave Physics & Black Hole Binary Systems**
- **Stellar Mergers & Planetary Engulfment**
- **General Relativity**
- **Quantum Gravity Theories & Quantum Cosmology**
- **STEM Outreach & Mentorship**
- **Linguistics**
- **Traditional Irish Music**
- **Ultimate Frisbee**

References

Dr. Melinda Soares-Furtado
Assistant Professor
University of Wisconsin–Madison
Departments of Physics, Astronomy
Email: mmsoares@wisc.edu

Dr. Evan Heintz
Undergraduate Advisor
University of Wisconsin–Madison
Departments of Physics, Astronomy
Email: eheintz@wisc.edu

Jeffrey R Schmidt
Distinguished Teaching Faculty
University of Wisconsin–Madison
Department of Physics
Email: jrschmi2@wisc.edu