

Tyler Barna

EDUCATION **Ph.D. Astrophysics** **Expected 2027**
Data Science in Astrophysics Minor
University of Minnesota-Twin Cities

B.S. Astrophysics **May 2021**
Rutgers University, New Brunswick - Honors College

RESEARCH EXPERIENCE **Graduate Research Assistant** **2021-Present**
Department of Physics and Astronomy, University of Minnesota-Twin Cities
Advisor: Assistant Professor Michael Coughlin
Project: *NMMA: A Nuclear-Physics and Multi-Messenger Astrophysics Framework*

- Working with large collaboration to study kilonovae via gravitational wave detection and electromagnetic observation
- Leading development of pipeline to automate analysis of ZTF data to inform follow-up observations of potential gravitational wave companions

Senior Honors Thesis **2020-2021**
Department of Physics and Astronomy, Rutgers University
Advisor: Professor Saurabh Jha
Project: *Early-Time Observations of Type Ia Supernovae with TESS*

- Conducted independent research on SNe Ia observed by the Transiting Exoplanet Survey Satellite at early rise times - Project received "High Honors"
- Engaged in monthly remote observation shifts on the Keck II Telescope

Undergraduate Researcher **2018-2020**
Department of Astrophysical Sciences, Princeton University
Advisor: Dr. Melinda Soares-Furtado

- Worked both locally and remotely on several research projects, including hydrodynamic simulations of globular clusters and analysis of data from the Kepler Space Telescope's K2 Mission
- Used time-management skills and conducted independent research on novel topics to independently accomplish project goals in a timely manner

Governor's School Scholar **Summer 2016**
New Jersey Governor's School of the Sciences, Drew University
Advisor: Dr. David Cincotta
Project: *Controlled Release Kinetics*

- Collaborated with a large group of students from across New Jersey to complete a complex research project in chemistry on a contracted time scale
- Helped to automate the collection of data and designed an experimental procedure that greatly increased the number of trials that could be run within the given time constraints

PUBLICATIONS *An online framework for fitting fast transient light curves*
Barna, T.; Reed, B.; Coughlin, M.W., in preparation (expected 2022)

NMMA: A nuclear-physics and multi-messenger astrophysics framework to analyze binary neutron star mergers
Pang, P.T.H.; Dietrich, T.; Coughlin, M.W.; ... **Barna, T.**; et al. 2022, arXiv preprint. (arXiv:2205.08513)

SALT3-NIR: Taking the Open-Source Type Ia Supernova Model to Longer Wavelengths for Next-Generation Cosmological Measurements

Pierel, J.D.R.; Jones, D.O.; Kenworthy, W.D.; ... **Barna, T.**; et al. 2022, arXiv eprint. (arXiv:2209.05594)

SN 2021csp – the explosion of a stripped envelope star within a H and He-poor circumstellar medium

Fraser, M.; Stritzinger, M.D.; Brennan, S.J.; ... **Barna, T.**; et al. 2021, arXiv eprint. (arXiv:2108.07278)

A Catalog of Periodic Variables in Open Clusters M35 and NGC 2158

Soares-Furtado, M.; Hartman, J.D.; Bhatti, W.; Bouma, L.G.; **Barna, T.**; Bakos, G.A. 2020, ApJS, Volume 246, Issue 1. (arXiv:1911.00832)

CONFERENCES **ZTF Summer School** **2022**
Coordination Assistant for NMMA (Talk)

NASA Kepler and K2 SciCon V **2019**
Searching for Exoplanets in Dense Clusters with Image Subtraction (Poster)

HONORS & AWARDS Winner of UMN Departmental 3 Minute Thesis Competition **2022**
Data Science in Multi-Messenger Astrophysics Research Fellowship **2022-2023**
Ney Fellowship **2022**
Rutgers University Trustee Scholarship **2017-2021**
Hoffman DiMuzio Community Scholarship **2017**
Brett Fenster Memorial Scholarship **2017**

COMPUTER SKILLS **Languages:** Python, Java, JavaScript, L^AT_EX
Applications: Emacs, Anaconda, Mathematica, Git, VirtualBox, Windows Subsystem for Linux, Slurm, WinSCP, PuTTY, Adobe Creative Suite, Microsoft Office
Operating Systems: Unix, Linux, Windows, Android

PROFESSIONAL AFFILIATIONS **American Astronomical Society** **2018-Present**
Student Member

WORK EXPERIENCE **USSF Certified Soccer Referee** **2015-2021**
South Jersey Soccer League & South Jersey Girls Soccer League
• Worked with other referees to make quick decisions in games ranging from adolescent to collegiate levels

Red Cross Certified Lifeguard **2016-2019**
Del Val Pool Maintenance
• Measured and recorded chemical levels on an hourly basis, making adjustments to satisfy safety standards

OUTREACH MifA Public Observing Nights **2022-Present**
Astronomy on Tap - Twin Cities **2022-Present**
Coughlin Group Elementary School Outreach **2022-Present**
ZTF Summer School Program **Summer 2022**
MifA Universe@Home Program **2021-2022**
Rutgers Astronomical Society **2018-2021**
Rutgers Honors College Mentoring Program **2017-2018**