

John “Jack” D. Roberts

 Jackbert1235 |  John Roberts |  jdroberts.space |  0000-0002-2854-5796
 roberts.2158@osu.edu

Research Interests

Stellar Evolution, Galactic Archaeology, Stellar Populations

EDUCATION

- 2020 - present Ph.D. in Astronomy at **The Ohio State University** (Expected May 2026)
Tenatative Thesis Title: *Red Giant Evolution and Galactic Archaeology with [C/N]*
Thesis Advisors: Marc Pinsonneault and Jennifer Johnson
College and University Teaching Graduate Certificate (Expected May 2026)
- 2016 - 2020 B.S. in Physics at **The University of Tennessee, Knoxville**
Minor: Astronomy, Mathematics *Summa Cum Laude*

SELECT PUBLICATIONS

- [1] John D. Roberts et al. “[C/N] Ages for Red Giants and their Implications for Galactic Archaeology”. In: *arXiv e-prints*, arXiv:2509.25321 (Sept. 2025), arXiv:2509.25321. arXiv: [2509.25321](#) [[astro-ph.SR](#)].
- [2] John D. Roberts et al. “Nature versus nurture: distinguishing effects from stellar processing and chemical evolution on carbon and nitrogen in red giant stars”. In: *MNRAS* 530.1 (May 2024), pp. 149–166. DOI: [10.1093/mnras/stae820](#). arXiv: [2403.03249](#) [[astro-ph.SR](#)].

ADS PUBLICATION LIBRARIES

1st Author

Contributing Author

TEACHING EXPERIENCE

Course Designer and Instructor August 2023 - May 2025

Designed and independently taught the following courses, creating course materials and getting the courses approved by the OSU curriculum committee.

- Astronomy 3810: Order of Magnitude — A course focused on developing student skills and thought processes by utilizing content taught in previous courses in new situations.
- Astronomy 4810: Advanced Order of Magnitude — An extension to 3810, this course places extra emphasis on problem solving and identifying relevant physics principles.

Graduate Teaching Assistant August 2021 - May 2025

Served as a teaching assistant to a variety of undergraduate astronomy courses offered at The Ohio State University, serving different roles for different courses.

- Astronomy 1101: From Planets to Cosmos — Administered labs, facilitated student discussions, and offered assistance on coursework in office hours.
- Astronomy 2141: Life in the Universe — Supported the professor by setting up LMS pages, administering exams, creating study guides, and running review sessions.

- Astronomy 2143: Cosmology — Supported the professor by setting up LMS pages, administering exams, creating study guides, and running review sessions.
- Astronomy 1102 (Virtual Course): From Planets to Cosmos — Organized course LMS page and offered assistance to students through remote office hours and email.

Undergraduate Physics Tutor

August 2019 - May 2020

Served as a physics tutor for non-major undergraduates in the University of Tennessee, Knoxville physics tutorial center.

MENTORSHIP EXPERIENCE

Adam Ballas (Ohio State Univeristy)

May 2025 - Present

Project: Identifying mono-mass populations with spectroscopic abundances

PRESENTATIONS

Contributed Talk	Sloan Digital Sky Survey Collaboration Meeting “Galactic Archaeology with [C/N] and Red Giants”	2025
Contributed Talk	Sloan Digital Sky Survey Collaboration Meeting “Calibrating [C/N] as an age diagnostic with APOKASC3”	2024
Contributed Talk	Sloan Digital Sky Survey Collaboration Meeting “Everything you need to know about the First Dredge-Up”	2023

FULL PUBLICATION LIST

1st Author Publications (Reverse Chronological Order)

- [1] John D. Roberts et al. “[C/N] Ages for Red Giants and their Implications for Galactic Archaeology”. In: *arXiv e-prints*, arXiv:2509.25321 (Sept. 2025), arXiv:2509.25321. arXiv: [2509.25321](#) [[astro-ph.SR](#)].
- [2] John D. Roberts et al. “Nature versus nurture: distinguishing effects from stellar processing and chemical evolution on carbon and nitrogen in red giant stars”. In: *MNRAS* 530.1 (May 2024), pp. 149–166. DOI: [10.1093/mnras/stae820](#). arXiv: [2403.03249](#) [[astro-ph.SR](#)].

Contributing Author Publications (Reverse Chronological Order)

- [1] Liam O. Dubay et al. “Challenges to the Two-Infall Scenario by Large Stellar Age Catalogs”. In: *arXiv e-prints*, arXiv:2508.00988 (Aug. 2025), arXiv:2508.00988. DOI: [10.48550/arXiv.2508.00988](#). arXiv: [2508.00988](#) [[astro-ph.GA](#)].
- [2] Yuxi Lu et al. “Anchoring Stellar Age Indicators: A Cross-Calibration of [C/N] and Gyrochronology Ages via the Age-Velocity-Dispersion Relation”. In: *arXiv e-prints*, arXiv:2506.24010 (June 2025), arXiv:2506.24010. DOI: [10.48550/arXiv.2506.24010](#). arXiv: [2506.24010](#) [[astro-ph.SR](#)].