The Ohio State University
Department of Astronomy
140 W. 18th Ave.
Columbus, OH 43210
https://jamesjohnson.space

James W. Johnson

Astrophysicist

johnson.7419@osu.edu | giganano9@gmail.com

Academic Appointments

The Observatories of the Carnegie Institution for Science — Pasadena, California

Beginning 2023 **Postdoctoral Fellow**, Carnegie Theoretical Astrophysics Center
Supervisor: Ana Bonaca

Education

The Ohio State University — Columbus, Ohio

July 2023 **Anticipate Ph.D. in Astrophysics**
Simultaneous Constraints on Galaxy Evolution and Stellar Nucleosynthesis
Thesis Advisor: David H. Weinberg

Vanderbilt University — Nashville, Tennessee

May 2017 **B.A., Physics major, Astronomy minor**, *cum laude*
Highest Honors in Astronomy, Thesis Advisor: Andreas A. Berlind

Honors & Awards

2022 **Ann S. Tuttle Graduate Student Paper Prize**
The Ohio State University, Department of Astronomy
Annual award to the top graduate student led publication of the previous year
J.W. Johnson, et al., 2021, MNRAS, 508, 4484, arxiv:2103.09838

2022 - Present **Presidential Fellowship**, **The Ohio State University**
Financial support for final-year graduate students

2017 - 2018 **Graduate Fellowship**, **The Ohio State University**

2017 **Larry Ross Cathey Award**
Vanderbilt University, Department of Physics & Astronomy
Outstanding graduating senior studying astronomy

Inducted 2015 **Sigma Pi Sigma Physics National Honor Society**

7 of 8 semesters **Vanderbilt University Dean's List**

Research

15	6	9	180+	7
Publications	Lead Author	Contributing Author	Citations	H-index

Seminars & Conference Presentations

Jan 2023	**241st AAS Conference**	Dissertation Talk
Aug 2021	**SDSS Collaboration Meeting**	Contributed Talk
June 2021	**GALAH Science Meeting**	Contributed Talk
June 2020	**SDSS Collaboration Meeting**	Contributed Talk
June 2020	**236th AAS Conference**	iPoster-Plus
May 2019	**Inter[stellar+galactic] Medium Program of Studies** University of California at Santa Cruz	Seminar

Astronomical Software Development

Versatile Integrator for Chemical Evolution (VICE)
Lead developer and license owner (Spring 2018 - Present)
Documentation: https://vice-astro.readthedocs.io
Source Code: https://github.com/giganano/VICE.git
Install: https://pypi.org/project/vice

Mentoring

2022 - Present **Daniel Boyea**, The Ohio State University
Senior Thesis, Summer Undergraduate Research Program

NASA ADS Libraries

All Papers https://ui.adsabs.harvard.edu/public-libraries/rIqfpNKmSdaOMIAhkk2VzQ
Lead Author https://ui.adsabs.harvard.edu/public-libraries/go1WSseGTMeft2SxdESAgw
Co-Author https://ui.adsabs.harvard.edu/public-libraries/sZkjSf_XRSKSRykqBe6B_w

Teaching

The Ohio State University, Department of Astronomy: Python Bootcamp

Program Creator, roughly 20 hours of instruction and exercises
2020 - 2022 Target audience: Summer Undergraduate Research Program
2022 Target audience: 1st- & 2nd-year graduate students
Source material: https://github.com/giganano/PythonBootcamp
Recordings: https://jamesjohnson.space/bootcamp

The Ohio State University, Department of Astronomy: Graduate Teaching Assistant

2018 - 2020	**Astronomy 1101: From Planets to Cosmo**	5 sections
2019	**Astronomy 1142: Black Holes**	1 section
2019	**Astronomy 1221: Astronomy Data Analysis**	1 section
2018	**Astronomy 1140: Planets and the Solar System**	1 section

Broader Activities

2022 - Present **Manuscript Referee**: ApJ, MNRAS
2022 - Present **Polaris Leadership Committee**
Graduate student led organization dedicated to fostering a more inclusive environment in physics and astronomy at Ohio State
https://physics.osu.edu/student-organizations-0/polaris-0

Aug 2022	**Undergraduate Residential Summer Access Program** Early-arrival program ran by Polaris
2022 - 2023	**Polaris Mentorship Course**
2021 - Present	**"Galaxy Hour" weekly research meeting co-organizer**
2017 - Present	**Ohio State Astronomy Diversity Journal Club participant**
June 2020	**Real Scientists Germany Online Outreach** Blog: https://tinyurl.com/jamesjohnsonrealscientistsDE Twitter: https://twitter.com/realsci_DE
2015 - 2017	**Undergraduate Tutor** Vanderbilt University, Department of Physics & Astronomy
2015	**Cosmic Ray Observatory Project** University of Nebraska-Lincoln, Department of Physics

Journal Publications

Lead-Author Publications (reverse chronological order)

1. *Dwarf galaxy archaeology from chemical abundances and star formation histories*
   J.W. Johnson, et al.
   2022, submitted to MNRAS, under peer review arxiv:2210.01816

2. *Binaries drive high Type Ia supernova rates in dwarf galaxies*
   J.W. Johnson, C.S. Kochanek, K.Z. Stanek
   2022, submitted to MNRAS, under peer review arxiv:2210.01818

3. *Empirical constraints on the nucleosynthesis of nitrogen*
   J.W. Johnson, D.H. Weinberg, F. Vincenzo, J.C. Bird, E.J. Griffith
   2022, MNRAS, 520, 782 - 803 arxiv:2202.04666

4. *Stellar migration and chemical enrichment in the milky way disc: a hybrid model*
   J.W. Johnson, et al.
   2021, MNRAS, 508, 4484 - 4511 arxiv:2103.09838

5. *The impact of starbursts on element abundance ratios*
   J.W. Johnson, D.H. Weinberg
   2020, MNRAS, 498, 1364 - 1381 arxiv:1911.02598

6. *The secondary spin bias of dark matter haloes*
   J.W. Johnson, A.H. Maller, A.A. Berlind, M. Sinha, J.K. Holley-Bockelmann
   2019, MNRAS, 486, 1156 - 1166 arxiv:1812.02206

Contributing Author Publications (reverse chronological order)

1. *Untangling the Sources of Abundance Dispersion in Low-Metallicity Stars*
   E.J. Griffith, J.A. Johnson, D.H. Weinberg, I. Ilyin, **J.W. Johnson**, R. Rodriguez-Martinez, K.G. Strassmeier
   2022, accepted for publication in ApJ arxiv:2210.01821

2. *Birth of the Galactic Disk Revealed by the H3 Survey*
   C. Conroy, et al., incl. **J.W. Johnson**
   2022, submitted to ApJ, under peer review arxiv:2204.02989

3. *Primordial Helium-3 Redux: The Helium Isotope Ratio of the Orion Nebula*
   R.J. Cooke, P. Noterdaeme, **J.W. Johnson**, M. Pettini, L. Welsh, C. Peroux, M.T. Murphy, D.H. Weinberg
   2022, ApJ, 932, 60 - 76 arxiv:2203.11256

4. *Residual Abundances in GALAH DR3: Implications for Nucleosynthesis and Identification of Unique Stellar Populations*
   E.J. Griffith, D.H. Weinberg, S. Buder, J.A. Johnson, **J.W. Johnson**, F. Vincenzo
   2021, ApJ, 931, 23 - 50 arxiv: 2110.06240

5. *Chemical Cartography with APOGEE: Mapping Disk Populations with a Two-Process Model and Residual Abundances*
   D.H. Weinberg, et al., incl. **J.W. Johnson**
   2021, ApJS, 260, 32 - 77 arxiv:2108.08860

6. *CNO dredge-up in a sample of APOGEE/Kepler red giants: Tests of stellar models and galactic evolutionary trends of N/O and C/N*
   F. Vincenzo, et al., incl. **J.W. Johnson**
   2021, submitted to MNRAS, under peer review arxiv:2106.03912

7. *The Impact of Black Hole Formation on Population-averaged Supernova Yields*
   E.J. Griffith, T. Sukhbold, D.H. Weinberg, J.A. Johnson, **J.W. Johnson**, F. Vincenzo
   2021, ApJ, 921, 73 - 94 arxiv:2103.09837

8. *Nucleosynthesis signatures of neutrino-driven winds from proto-neutron stars: a perspective from chemical evolution models*
   F. Vincenzo, T.A. Thompson, D.H. Weinberg, E.J. Griffith, **J.W. Johnson**, J.A. Johnson
   2021, MNRAS, 508, 3499 - 3507 arxiv:2102.04920

9. *The Similarity of Abundance Ratio Trends and Nucleosynthetic Patterns in the Milky Way Disk and Bulge*
   E.J. Griffith, et al., incl. **J.W. Johnson**
   2021, ApJ, 909, 77 - 101 arxiv:2009.05063