

The Observatories of the
Carnegie Institution for Science
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James W. Johnson
Curriculum Vitae
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Academic Appointments

The Observatories of the Carnegie Institution for Science Pasadena, California
2023 – Present **Postdoctoral Fellow**, Carnegie Theoretical Astrophysics Center (CTAC)
Advisor: Ana Bonaca

Education

The Ohio State University Columbus, Ohio
July 2023 **Ph.D. in Astrophysics**, Dissertation Advisor: David H. Weinberg
From Dwarfs to Spirals: Chemical Evolution of Galaxies across Stellar Mass and the Implications for Nucleosynthesis

Vanderbilt University Nashville, Tennessee
May 2017 **B.A. in Physics & Astronomy**, *cum laude*
Highest Honors in Astronomy, Thesis Advisor: Andreas A. Berlind

Research

15	6	9	255+	10
Journal Publications	First Author	Contributing Author	Citations	H-Index

[NASA ADS Libraries](#) (A full list of my journal publications is included.)

All My Papers <https://ui.adsabs.harvard.edu/public-libraries/rIqfpNKmSdaOMIAhkk2VzQ>
First Author <https://ui.adsabs.harvard.edu/public-libraries/go1WSseGTMeft2SxdESAgw>
Co-Author https://ui.adsabs.harvard.edu/public-libraries/sZkjSf_XRSKSRykqBe6B-w

Seminars & Conference Presentations

January 2023	241st AAS Conference	Dissertation Talk
August 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	University of California, Santa Cruz, Dept. of Astronomy	Seminar

Mentoring

2022 – Present **Daniel A. Boyea**, Ohio State, Dept. of Astronomy
Undergraduate Honors Program with Research Distinction
Summer Undergraduate Research Program

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>

Honors & Awards

- 2022 **Ann S. Tuttle Paper Prize**, Ohio State, Dept. 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 – 2023 **Presidential Fellowship**, Ohio State, College of Arts & Sciences
Financial support for final-year graduate students
- 2017 – 2018 **University Fellowship**, Ohio State, College of Arts & Sciences
Financial support for first-year graduate students
- 2017 **Larry Ross Cathey Award**, Vanderbilt, Dept. of Physics & Astronomy
Outstanding graduating senior studying astronomy
- Inducted 2015 **Sigma Pi Sigma**, Vanderbilt Chapter
- 7 of 8 semesters **Dean's List**, Vanderbilt, College of Arts & Sciences

Teaching

The Ohio State University, Department of Astronomy: Python Bootcamp

Program Creator, six sessions, ~20 hours of instruction and exercises

2020 – 2023 Target audience: Summer Undergraduate Research Program

2022 Target audience: 1st- & 2nd-year graduate studentsWebsite: <https://jamesjohnson.space/bootcamp>Source material: <https://github.com/giganano/PythonBootcamp>

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

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|-------------|---|------------|
| 2018 – 2020 | Astronomy 1101: From Planets to Cosmos | 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 – 2023 **Polaris Leadership Committee**, Ohio State, Depts. of Physics & Astronomy
Website: <https://u.osu.edu/polaris>
Graduate student-led organization dedicated to fostering a more inclusive environment and improving retention of underrepresented minority groups
- 2022 – 2023 **Mentor**, Polaris Mentorship Course
- August 2022 **Academic Facilitator**, Undergraduate Residential Summer Access Program
A Polaris early-arrival program for first-year undergraduates
- 2021 – 2023 **“Galaxy Hour” meeting organizer**, Ohio State, Dept. of Astronomy

- 2017 – 2023 **Diversity Journal Club participant**, Ohio State, Dept. of Astronomy
 June 2020 **Real Scientists Germany Online Outreach**
 Blog: <https://tinyurl.com/jamesjohnsonrealscientistsDE>
 Twitter: https://twitter.com/realsci_DE
- 2015 – 2017 **Undergraduate Tutor, Proctor, Grader**
 Vanderbilt University, Dept. of Physics & Astronomy
- 2015 **Cosmic Ray Observatory Project**
 University of Nebraska-Lincoln, Dept. of Physics

Journal Publications

First Author (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 (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