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)
Supervisor: Dr. Ana Bonaca

Education

The Ohio State University — Columbus, Ohio

July 2023 **Ph.D. in Astrophysics**, Dissertation Advisor: Prof. 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: Prof. Andreas A. Berlind

Research

17	6	11	330+	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

Mentoring

2022 – 2023 **Daniel A. Boyea**, Ohio State, Dept. of Astronomy
Undergraduate Honors Thesis, Summer Undergraduate Research Program
Now: Ph.D. student at University of Victoria (Advisor: Prof. Julio F. Navarro)

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

Seminars & Conference Presentations

Contributed Talk	**Surveying the Milky Way: The Universe in Our Own Backyard** California Institute of Technology, Pasadena, CA	2023
Dissertation Talk	**241st American Astronomical Society Meeting**	2023
Contributed Talk	**Sloan Digital Sky Survey Collaboration Meeting**	2021
Contributed Talk	**Galactic Archaeology with Hermes Science Meeting**	2021
Contributed Talk	**Sloan Digital Sky Survey Collaboration Meeting**	2020
Poster	**236th American Astronomical Society Meeting**	2020
Seminar	**Inter[stellar+galactic] Medium Program of Studies** University of California, Santa Cruz, Dept. of Astronomy & Astrophysics	2019

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 *Johnson J.W., 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 Physics National Honor Society**, 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 students

Website: https://jamesjohnson.space/bootcamp

Source material: https://github.com/giganano/PythonBootcamp

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

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

Miscellaneous

2022 – Present	**Manuscript Referee**: ApJ, MNRAS, PASJ
2024	**Advancing Inclusive Mentoring**, Carnegie Science 12+ hours of instruction and discussion on equitable mentorship practices
2021 – 2023	**"Galaxy Hour" meeting organizer**, Ohio State, Dept. of Astronomy
2017 – 2023	**Diversity Journal Club**, Ohio State, Dept. of Astronomy

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

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**, Instrumentation lab
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*
Johnson J.W., et al.
2022, MNRAS, 526, 5084 – 5109 arxiv:2210.01816

2. *Binaries drive high Type Ia supernova rates in dwarf galaxies*
Johnson J.W., Kochanek C.S., Stanek K.Z.
2022, MNRAS, 526, 5911 – 5918 arxiv:2210.01818

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

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

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

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

Contributing Author (reverse chronological order)

1. *Nature vs. Nurture: Distinguishing effects from stellar processing and chemical evolution on carbon and nitrogen in red giant stars*
Roberts J.D., et al., incl. **Johnson J.W.**
2024, accepted for publication in MNRAS arxiv:2403.03249

2. *The Scale of Stellar Yields: Implications of the Measured Mean Iron Yield of Core Collapse Supernovae*
   Weinberg D.H., Griffith E.J., **Johnson J.W.**, Thompson T.A.
   2023, submitted to ApJ, under peer review arxiv:2309.05719

3. *Untangling the Sources of Abundance Dispersion in Low-Metallicity Stars*
   Griffith E.J., Johnson J.A., Weinberg D.H., Ilyin I., **Johnson J.W.**, Rodriguez-Martinez R., Strassmeier K.G.
   2022, ApJ, 944, 47 – 67 arxiv:2210.01821

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

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

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

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

8. *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*
   Vincenzo F., et al., incl. **Johnson J.W.**
   2021, submitted to MNRAS, under peer review arxiv:2106.03912

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

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

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