James W. Johnson

Presidential Fellow

The Ohio State University
Department of Astronomy
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https://jamesjohnson.space

Education

The Ohio State University — Columbus, Ohio
Anticipate Ph.D. in Astrophysics — June 2023
Thesis Advisor: David H. Weinberg
M.S. in Astrophysics — November 20, 2019

Vanderbilt University — Nashville, Tennessee
B.A., Physics major, Astronomy minor, *cum laude* — May 12, 2017
Highest Honors in Astronomy
Thesis Advisor: Andreas A. Berlind

Honors & Awards

Fall 2022	**Ann S. Tuttle Graduate Student Paper Prize** Best paper written by a graduate student (MNRAS, 508, 4484) The Ohio State University, Department of Astronomy
May 2022 – Present	**Presidential Fellowship, The Ohio State University** Most prestigious award given by the Graduate School
Aug 2017 – Aug 2018	**Graduate Fellowship, The Ohio State University**
Spring 2017	**Larry Ross Cathey Award** Outstanding graduating senior studying astronomy Vanderbilt University, Department of Physics & Astronomy
Inducted Spring 2015	**Sigma Pi Sigma Physics National Honor Society**
7 of 8 Semesters	**Vanderbilt University Dean's List**

Research

Journal Publications

Author of 15 articles in refereed astronomical journals: 6 lead-author, 9 co-author
A full list of my publications is attached.

Open Source 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 and Conference Presentations

Aug 11 – 17, 2021	**Sloan Digital Sky Survey Collaboration Meeting**	Contributed talk
Jun 22 – 24, 2021	**2021 GALAH Science Meeting**	Contributed talk
Jun 22 – 26, 2020	**Sloan Digital Sky Survey Collaboration Meeting**	Contributed talk
Jun 1 – 3, 2020	**236th American Astronomical Society Meeting**	iPoster-Plus
May 28, 2019	**Inter[stellar+galactic] Medium Program of Studies** University of California at Santa Cruz	Seminar

Mentoring

May 2022 – Present **Daniel Boyea**, The Ohio State University
Summer Undergraduate Research Program, Senior Thesis
Project: *Empirical Constraints on the Nucleosynthesis of Carbon*

Teaching

The Ohio State University, Dept. of Astronomy: Python Bootcamp

May 2020, 2021, 2022 ~20 hours of instruction, sole designer and instructor
Source Material: https://github.com/giganano/PythonBootcamp
Recordings: https://jamesjohnson.space/bootcamp_recordings.html

The Ohio State University, Dept. of Astronomy: Graduate Teaching Assistant

Fall 2018 – Fall 2020	**Astronomy 1101: From Planets to Cosmos** (5 sections)
Fall 2019	**Astronomy 1142: Black Holes** (1 section)
Spring 2019	**Astronomy 1221: Astronomy Data Analysis** (1 section)
Fall 2018	**Astronomy 1140: Planets and the Solar System** (1 section)

Broader Activities

Jan 2022 – Present	**Polaris Leadership Committee** Graduate student led organization dedicated to improving the retention of physics students from marginalized backgrounds
Aug 2022	**Undergraduate Residential Summer Access Program** A Polaris initiative, Academic Facilitator
Sep 2021 – Present	**"Galaxy Hour" Weekly Research Meeting Co-Organizer** The Ohio State University, Department of Astronomy
Summer 2018 – Present	**Friends of Ohio State Astronomy & Astrophysics**
Fall 2017 – Present	**Diversity Journal Club Participant** The Ohio State University, Department of Astronomy
Jun 15 – 21, 2020	**Real Scientists Germany Online Outreach** Blog: https://tinyurl.com/jamesjohnsonrealscientistsDE Twitter: https://twitter.com/realsci_DE
Spring 2019	**Ohio Science Olympiad: Volunteer**
Jan 2015 – Apr 2017	**Undergraduate Tutor** Vanderbilt University, Department of Physics & Astronomy
Summer 2015	**Cosmic Ray Observatory Project** University of Nebraska-Lincoln, Department of Physics Lab technician: instrumentation

List of Peer-Reviewed Publications

NASA ADS Libraries

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

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:xxxx.yyyyy
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:xxxx.yyyyy
3. *Empirical constraints on the nucleosynthesis of nitrogen*
   J. W. Johnson, D. H. Weinberg, F. Vincenzo, J. C. Bird, E. J. Griffith
   2022, submitted to MNRAS, under peer review 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 arxiv:2103.09838
5. *The impact of starbursts on element abundance ratios*
   J. W. Johnson, D. H. Weinberg
   2020, MNRAS, 498, 1364 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 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, submitted to ApJ, under peer review arxiv:xxxx.yyyyy
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 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 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 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 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 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 arxiv:2009.05063