JOEL C. ZINN

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NSF Postdoctoral Fellow
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EDUCATION AND PAST POSITIONS

American Museum of Natural History
NSF Astronomy and Astrophysics Postdoctoral Fellow   *October 2020 - Present*

University of New South Wales
Associate Researcher, School of Physics   *June 2019 - September 2020*
Advisor: Dennis Stello

Ohio State University
Ph.D. in Astronomy   *August 2014 – May 2019*
Dissertation: *Accurate red giant distances and radii with asteroseismology*
Advisor: Marc H. Pinsonneault
M.S. in Astronomy   *December 2016*

Princeton University
B.A. in Astrophysical Sciences, magna cum laude   *June 2013*
Thesis: *A study in weak lensing magnification with* WISE *AGN and SDSS galaxies*
Minor in Theatre

REFEREED PUBLICATIONS (ADS; H-INDEX 13 [26 MARCH 2021])

24. **Zinn, J. C.** *Validation of the Gaia Early Data Release 3 parallax zero-point model with asteroseismology*, ApJ, in press

23. Warfield, J. T.; **Zinn, J. C.**; et al. *An intermediate-age alpha-rich Galactic population in K2*, AJ, Volume 161, Issue 3, 2021 (arXiv:2102.03377)
    Co-advised Warfield

22. **Zinn, J. C.**; et al. *The K2 Galactic Archaeology Program Data Release 2: asteroseismic results from Campaigns 4, 6, & 7*, ApJS, Volume 251, Issue 2, 2020 (arXiv:2012.04051)

21. Riess, A. G.; Casertano, S.; Yuan, W.; Bowers, B. J.; Macri, L.; **Zinn, J. C.**, Scolnic, D. *Cosmic distances calibrated to 1% precision with Gaia EDR3 parallaxes and Hubble Space Telescope photometry of 75 Milky Way Cepheids confirm tension with* ΛCDM, ApJL, Volume 908, Issue 1, 2021 (arXiv:2012.08534)
    Corroborated the Gaia EDR3 parallax offset with asteroseismology

20. Silva Aguirre, V.; et al. (incl. **Zinn, J. C.**), *Detection and characterization of oscillating red giants: first results from the TESS satellite*, ApJL, Volume 889, Issue 2, 2020 (arXiv:1912.07604)
Provided *K2* asteroseismic results using my BAM pipeline

19. Sharma, S.; Stello, D.; Bland-Hawthorn, J.; Hayden, M. R.; **Zinn, J. C.**; (+ 32 additional authors), *The* K2-*HERMES survey: age and metallicity of the thick disk*, MNRAS, Volume 490, Issue 4, 2019 (arXiv:1904.12444)
Provided *K2* asteroseismic masses using my BAM pipeline

18. Grunblatt, S. K.; Huber, D.; Gaidos, E.; Hon, M., **Zinn, J. C.**, Stello, D., *Giant planet occurrence within 0.2 au of low-luminosity red giant branch stars with* K2, AJ, Volume 158, Issue 6, 2019 (arXiv:1910.05346)
Verified asteroseismic detections of planet hosts using my BAM pipeline

17. **Zinn, J. C.**; Pinsonneault, M. H.; Huber, D.; Stello, D.; Stassun, K; Serenelli, A., *Testing the radius scaling relation with* Gaia *DR2 in the* Kepler *field*, ApJ, Volume 885, Issue 2, 2019 (arXiv:1910.00719)

16. **Zinn, J. C.**; Stello, D.; Huber, D.; Sharma, S., *The Bayesian Asteroseismology data Modeling Pipeline and its application to* K2 *data*, ApJ, Volume 884, Issue 2, 2019 (arXiv:1909.11927)

15. **Zinn, J. C.**; Pinsonneault, M. H.; Huber, D.; Stello, D. *Confirmation of the* Gaia *DR2 parallax zero-point offset using asteroseismology and spectroscopy in the* Kepler *field*, ApJ, Volume 878, Issue 2, 2019 (arXiv:1805.02650)

14. Aguado, D. S.; (+ 230 additional authors); **Zinn, J. C.**; and Zou, H., *The fifteenth data release of the Sloan Digital Sky Surveys: first release of MaNGA-derived quantities, data visualization tools, and stellar library*, ApJS, Volume 240, Issue 2, 2019 (arXiv:1812.02759)
Checked surface gravity calibration using asteroseismic targets

13. Pinsonneault, M. H.; Elsworth, Y. P.; Tayar, J.; Serenelli, A.; Stello, D.; **Zinn, J. C.**; et al. (+ 30 additional authors), *The second APOKASC catalog: the empirical approach*, ApJS, Volume 239, Issue 32, 2018 (arXiv:1804.09983)
Confirmed systematics in *Kepler* asteroseismology by comparing to *K2*

12. Buder, S.; (+ 40 additional authors); **Zinn, J. C.**; and Žerjal, M., *The GALAH survey: second data release*, MNRAS, Volume 478, Issue 4, 2018 (arXiv:1804.06041)
Derived asteroseismic surface gravities from *K2* for spectroscopic calibration

11. Hon, M.; Stello, D.; and **Zinn, J. C.**, *Detecting solar-like oscillations in red giants with deep learning*, ApJ, Volume 859, Issue 1, 2018 (arXiv:1804.07495)
Vetted asteroseismic data used for machine learning training

10. Abolfathi, B.; (+ 345 additional authors); **Zinn, J. C.**; and Zou, H., *The fourteenth data release of the Sloan Digital Sky Survey: first spectroscopic data from the Extended Baryon Oscillation Spectroscopic Survey and from the second phase of the Apache Point Observatory Galactic Evolution Experiment*, ApJS, Volume 235, Issue 2, 2018 (arXiv:1707.09322)
Identified a systematic error in the secondary clump spectroscopic data

9. Albareti, F. D.; (+ 341 additional authors); **Zinn, J. C.**; and Zou, H., *The 13th data release of the Sloan Digital Sky Survey: first spectroscopic data from the SDSS-IV Survey Mapping Nearby Galaxies at Apache Point Observatory*, ApJS, Volume 233, Issue 2, 2017 (arXiv:1608.02013)
Checked surface gravity calibration using asteroseismic targets

8. **Zinn, J. C.**; Huber, D.; Pinsonneault, M. H.; Stello, D., *Evidence for spatially-correlated* Gaia *parallax errors in the* Kepler *field*, ApJ, Volume 844, Issue 2, 2017 (arXiv:1706.09416)

7. Huber, D.; **Zinn, J. C.**; et al. (+ 18 additional authors), *Asteroseismology and* Gaia*: testing scaling relations using 2200* Kepler *stars with TGAS parallaxes*, ApJ, Volume 844, Issue 2, 2017 (arXiv:1705.04697)
A companion paper to mine on spatially-correlated *Gaia* parallax errors

6. **Zinn, J. C.**; Kochanek, C. S.; et al. (+ 12 additional authors), *Variable classification in the LSST era: exploring a model for quasi-periodic light curves*, MNRAS, Volume 468, Issue 2, 2017 (arXiv:1612.04834)

5. Kennedy, M. R.; Callanan, P.; Garnavich, P. M.; Fausnaugh, M.; **Zinn, J. C.**, XMM-Newton *observations of the peculiar cataclysmic variable Lanning 386: X-ray evidence for a magnetic primary*, MNRAS, Volume 466, Issue 2, 2017 (arXiv:1612.04397)
Obtained spectroscopic data for Lanning 386

4. Stello, D.; **Zinn, J. C.**; et al. (+ 12 additional authors), *The* K2 *Galactic Archaeology Program Data Release 1: asteroseismic results from Campaign 1*, ApJ, Volume 835, Issue 1, 2017 (arXiv:1611.09852)
Contributed asteroseismic data using my BAM pipeline

3. More, A.; Oguri, M.; Kayo, I.; **Zinn, J. C.**; et al. (+ 14 additional authors), *The SDSS-III BOSS quasar lens survey: discovery of 13 gravitationally lensed quasars*, MNRAS, Volume 456, Issue 2, 2016 (arXiv:1509.07917)
Identified three of the 13 presented lenses using a spectroscopic approach

2. Slepian, Z.; Gott, R.; and **Zinn, J. C.**, *A one-parameter formula for testing slow-roll dark energy: observational prospects*, MNRAS, Volume 438, Issue 3, 2014 (arXiv:1301.4611)
Quantified anticipated constraints using Cosmic Microwave Background data

1. (+ 493 additional authors); **Zinn, J. C.**, *The ninth data release of the Sloan Digital Sky Survey: first spectroscopic data from the SDSS-III Baryon Oscillation Spectroscopic Survey*, ApJS, Volume 203, Issue 2, 2012 (arXiv:1207.7137)

PROFESSIONAL SERVICES, ACTIVITIES, AND RECOGNITION

Astrophysical Journal, Monthly Notices of the Royal Astronomical Society, and Astronomy & Astrophysics referee

AAS Astronomy Ambassador	*2019 – Present*
AAS Doxsey Travel Prize	*2019*
Ann S. Tuttle Citizenship, Engagement, and Outreach Prize	*2018*

Kavli Institute for Theoretical Physics Graduate Fellowship   *2019*

Junior Member, American Astronomical Society   *2016 – Present*

Member, Sigma Xi   *2013 – 2019*

RECENT PRESENTATIONS

AMNH Astro Seminar   *September 2020*
Accurate asteroseismology for Galactic archaeology in the Gaia era

AAS 235   *January 2020*
Testing the radius scaling relation with Gaia *DR2 in the* Kepler *field*

Centre College, Danville, KY   *April 2019*
Red giant asteroseismology and the Galaxy (**invited talk**)

AAS 233   *January 2019*
Self-consistent radius and distance scales from red giant asteroseismology using K2*,* Kepler*, and* Gaia

SDSS-IV Collaboration Meeting   *June 2018*
APOKASC-Gaia *self-consistency, Round II: mutually testing scaling relations and parallax systematics with the second data releases of APOKASC and* Gaia (contributed talk)

Galactic Archaeology, *Kepler* & *K2* Science Conference IV   *June 2017*
Mind the GAP: a 360 degree view of the Galaxy with the K2 *Galactic Archaeology Program* (contributed talk)

Galactic Archaeology with Kepler and K2, AAS 229   *January 2017*
K2 *red giant asteroseismology with Bayesian Asteroseismology data Modeling (BAM)* (**invited talk**)

PUBLIC OUTREACH

Facilitator (telescope nights & hands-on activities in Sydney)   *2019 – 2020*

Show presenter and designer, Ohio State University planetarium   *2014 – 2019*

Organizer, Astronomy on Tap (informal lectures at local bars)   *2015 – 2016*

TEACHING AND MENTORING

Life in the universe, Head lab instructor, Ohio State University   *2014*

Krisann Stephany, Ohio State Astro. undergrad & SURP researcher   *2018 – 2019*
Supervised her development of a planetarium show, "Origin of the elements", and aligning its content to national education standards. Collaborated with local teachers for her to create and implement a middle school module based on the show.

Jack Warfield, Ohio State University Astronomy undergrad   *2018 – Present*
Co-supervised his generation of a *K2* asteroseismology–APOGEE catalogue, and subsequent investigations of an asteroseismically-young, chemically-old stellar population.

OBSERVING EXPERIENCE

LBT Observatory, Large Binocular Telescope   *June 2016*
Instrument: Multi-Object Double CCD Spectrograph/Imager; Large Binocular Camera; LUCI (infrared spectrograph/imager)
Description: Ohio State queue observing — **88 hours**

MDM Observatory, 2.4m Hiltner Telescope   *September 2015*
Instrument: Ohio State Multi-Object Spectrograph (Blue)
Description: Ohio State queue observing — **88 hours**

MDM Observatory, 2.4m Hiltner Telescope   *June 2015*
Instrument: Ohio State Multi-Object Spectrograph (Red)
Description: Deep imaging and spectroscopy of lens candidates, **Principal Investigator — 24 hours**

TECHNICAL STRENGTHS

Languages   Python, bash, IDL, Cython, SQL, Fortran
Tools   Latex, Emacs, Starry Night, Scidome, git