

Joshua V. Shields

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Education

PhD in Astrophysics — [Michigan State University](#), East Lansing, MI 2019-2024
Thesis - Run With the Hunted: Searching For Surviving SN Ia Companions and Constraining the SN Ia Progenitor System Through Stellar Modelling - Advisor: Dr Wolfgang Kerzendorf
Conducting systematic supernova remnant stellar populations to identify surviving companions of the exploded stars. Work involves astrometry and proper motion extraction, analysis of large astronomical surveys, physical modeling of stellar observations and radiative transfer simulations of stellar atmospheres

Additional Coursework — [The Ohio State University](#), Columbus, OH 2017
Graduate Level Classes - Astronomy

Bachelors of Arts — [Vassar College](#), Poughkeepsie, NY 2012-2016
Triple Major - Physics, Astronomy, and Russian Studies

Research Interests

Supernova and stellar radiative transfer and spectral synthesis, supernova remnants, archival data synthesis, astrostatistics, Bayesian inference and Monte-Carlo methods, supernova cosmology

Professional Talks

Rise Time - Purdue University - Contributed Talk Aug 2024

Space Telescope Science Institute Transients Group - Invited Talk Oct 2023

University of Michigan - Extreme Astrophysics Group Invited Talk Apr 2023

54th Annual Meeting of the Dynamical Division of Astronomy - Contributed Talk May 2023

Michigan State Astronomy Seminar Oct 2022

2nd Meeting on Progress in Astrophysics with Type-Ia Supernovae - Royal Astronomical Society
Contributed Talk Dec 2022

Supernova Remnants and their Progenitors - Center for Astrophysics, Harvard and Smithsonian
Contributed Talk Aug 2022

Academic Leadership and Service

Michigan State Journal Club - [Astro Coffee](#) — Founder 2020-Present

[Stellar Mentorship Program](#) — Graduate Student Mentor 2021-2022

Software Development

[STARDIS](#) - Main Developer — Stellar radiative transfer spectral synthesis

[TARDIS](#) - Core Developer — Supernova spectral synthesis

Mentoring and Teaching

Undergraduate Research Assistant - Ryan Groneck - Designing Approachable Documentation and Introductory Material for Stellar Spectral Synthesis	2024
Summer REU - Kiyah Young-Wilson - Measuring Chemical Abundances of Galactic Center Stars	2024
Summer REU - Iliomar Rodriguez-Ramos - Exploring the Complex Structures of Ancient Stars	2023
Google Summer of Code - William Black - Methods In Stellar Modeling and Code Structure	2023
Google Summer of Code Student - Aarya Chaumal - Stellar Atmospheric Code Optimization	2023
Undergraduate Research Assistant - Sofia Biriouk - Cass A Stellar Population Investigation	2021 - 2023
Undergraduate Research Assistant - Hayden Monk - Ia Remnant Population Visualization	2022 - 2024
Summer REU - Morgan Sandler - Repository Construction For All ADS Publications	2020
Graduate Teaching Assistant - Introductory Astronomy Lab Class	2019-2021

Selected Publications

Published(19 total, 3 first author, 1988 total citations, h-index of 14 as of Oct 24)

- *No Surviving SN Ia Companion In SNR 0509-67.5: Stellar Population Characterization and Comparison To Models*
Shields, J. V. et al. 2023, *ApJL*, 950, L10
- *The ASAS-SN bright Supernova catalog – V. 2018-2020*
Neumann, K. D. et al. 2023, *MNRAS*, tmp, 366N
- *Searching for a Hypervelocity White Dwarf SN Ia Companion: A Proper-motion Survey of SN 1006*
Shields, J. V. et al. 2022, *ApJL*, 933, L31
- *The ASAS-SN catalogue of variable stars - V. Variables in the Southern hemisphere*
Jayasinghe, T. et al. 2020, *MNRAS*, 491, 13J
- *The ASAS-SN Catalog of Variable Stars IV: Periodic variables in the APOGEE survey*
Pawlak, Michal et al. 2019, *MNRAS*, 487, 5932P
- *The ASAS-SN Catalog of Variable Stars III: Variables in the Southern TESS Continuous Viewing Zone*
Jayasinghe, T. et al. 2018, *MNRAS*, 485, 961J
- *The ASAS-SN Bright Supernova Catalog - IV. 2017*
Holoien, T. W.-S., et al. 2019, *MNRAS*, 484, 1899H
- *The ASAS-SN Catalog of Variable Stars II: Uniform Classification of 412,000 Known Variables*
Jayasinghe, T. et al. 2019, *MNRAS*, 486, 961J
- *An All-Sky Search For R Coronae Borealis Stars in ASAS-SN*
Shields, J. V. et al. 2019, *MNRAS*, 483, 4470S
- *Photometric and Spectroscopic Properties of Type Ia Supernova 2018oh with Early Excess Emission from the Kepler 2 Observations*
Li, W. et al. 2019, *ApJ*, 870, 12L
- *Seeing Double: ASASSN-18bt Exhibits a Two-Component Rise in the Early-Time K2 Light Curve*
Shappee, B. J, et al. 2019, *ApJ*, 870, 13S
- *The ASAS-SN catalogue of variable stars I: The Serendipitous Survey*
Jayasinghe, T. et al. 2018, *MNRAS*, 477, 3145
- *ASASSN-18di: Discovery of a Powerful Flare on a Mid-M Dwarf*
Rodríguez, R. et al. 2018, *RNAAS*, 2b, 8
- *The ASAS-SN bright supernova catalogue - III. 2016*
Holoien, T. W.-S. et al. 2017, *MNRAS*, 471, 4966
- *The All-Sky Automated Survey for Supernovae (ASAS-SN) Light Curve Server v1.0*
Kochanek, C. S. et al. 2017, *PASP*, 129, 104502

Outreach

Astronomy On Tap Public Outreach Event - Ongoing — Speaker	2022 - 2024
MSU Observatory Public Observing Night - Ongoing — Volunteer	2023 - 2024
Open Public Observing Nights - Vassar Class of 1951 Observatory — Volunteer	2015 - 2016

Reviewer Activities

Refereed 2 articles for the Astrophysical Journal

Circulars and Telegrams

Co-authored 330+ Astronomer's Telegrams and Transient Name Server reports
(12 First Author)

Computational Skills

Operating Systems - MacOS/OS X, UNIX/Linux, Windows
Computer Languages - Python, L^AT_EX, bash, SQL, R, html, Perl, Mathematica, Java
Software - git, emacs, VScode, topcat, DS9, IRAF, MESA

Awards

Outstanding Scholar Fellowship - Michigan State University	2024
Dissertation Completion Fellowship - Michigan State University	2023
Outstanding Teaching Assistant Award	2020

Advisors

Graduate Advisor — Michigan State University
Wolfgang Kerzendorf

Post-Baccalaureate Research Advisors — The Ohio State University
Krzysztof Stanek, Chris Kochanek

Undegraduate Major Advisor — Vassar College
Debra Elmegreen