

Joshua V. Shields

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Education

PhD in Astrophysics — [Michigan State University](https://www.msu.edu/), 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

Postbaccalaureate Research - ASAS-SN Analyst — [The Ohio State University](https://www.ohio-state.edu/), Columbus, OH 2017-2019
Additional Graduate Level Classes - Astronomy
Advisors - Krzysztof Stanek and Christopher Kochanek
Maintenance of the [ASAS-SN](https://www.asas-sn.net/) Survey to discover low redshift transients

Bachelors of Arts — [Vassar College](https://www.vassar.edu/), Poughkeepsie, NY 2012-2016
Triple Major - Physics, Astronomy, and Russian Studies
Advisor - Debra Elmegreen

Software Development

[STARDIS](#) - Lead Developer — Stellar spectral synthesis

[TARDIS](#) - Core Developer — Monte Carlo radiative transfer in supernovae

[CARSUS](#) - Developer — Atomic Database for Astronomy

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 Astrophysics 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

Mentoring and Teaching

Undergraduate Research Assistant - Ryan Groneck - Designing Approachable Documentation and Introductory Material for Stellar Spectral Synthesis	2024-Present
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 - 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

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

Non-refereed Publications, Circulars, 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, \LaTeX , 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

Research Interests

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

Publications

Published(19 total, 3 first author, 1988 total citations, h-index of 14 as of Oct 2024)

1. *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
2. *The ASAS-SN bright Supernova catalog – V. 2018-2020*
Neumann, K. D. et al. 2023, *MNRAS*, tmp, 366N
3. *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
4. *Survey of period variations of superhumps in SU UMa-type dwarf novae. X. The tenth year (2017)*
Kato, Taichi et al. 2020, *PASJ*, 72, 14K
5. *The ASAS-SN catalogue of variable stars - V. Variables in the Southern hemisphere*
Jayasinghe, T. et al. 2020, *MNRAS*, 491, 13J
6. *The ASAS-SN Catalog of Variable Stars IV: Periodic variables in the APOGEE survey*
Pawlak, Michal et al. 2019, *MNRAS*, 487, 5932P
7. *The ASAS-SN Catalog of Variable Stars III: Variables in the Southern TESS Continuous Viewing Zone*
Jayasinghe, T. et al. 2018, *MNRAS*, 485, 961J
8. *The ASAS-SN Bright Supernova Catalog - IV. 2017*
Holoien, T. W.-S., et al. 2019, *MNRAS*, 484, 1899H
9. *The ASAS-SN Catalog of Variable Stars II: Uniform Classification of 412,000 Known Variables*
Jayasinghe, T. et al. 2019, *MNRAS*, 486, 961J
10. *An All-Sky Search For R Coronae Borealis Stars in ASAS-SN*
Shields, J. V. et al. 2019, *MNRAS*, 483, 4470S
11. *K2 Observations of SN 2018oh Reveal a Two-Component Rising Light Curve for a Type Ia Supernova*
Dimitriadis, G. et al. 2019, *ApJ*, 870L, 1D
12. *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
13. *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
14. *ASASSN-18ey: The Rise of a New Black Hole X-Ray Binary*
Tucker, M. A. et al. 2018, *ApJ*, 867, L9
15. *The ASAS-SN catalogue of variable stars I: The Serendipitous Survey*
Jayasinghe, T. et al. 2018, *MNRAS*, 477, 3145
16. *ASASSN-18di: Discovery of a Powerful Flare on a Mid-M Dwarf*
Rodríguez, R. et al. 2018, *RNAAS*, 2b, 8
17. *The ASAS-SN bright supernova catalogue - III. 2016*
Holoien, T. W.-S. et al. 2017, *MNRAS*, 471, 4966
18. *Survey of period variations of superhumps in SU UMa-type dwarf novae. IX. The ninth year (2016-2017)*
Kato, Taichi et al. 2017, *PASP*, 69, 75K
19. *The All-Sky Automated Survey for Supernovae (ASAS-SN) Light Curve Server v1.0*
Kochanek, C. S. et al. 2017, *PASP*, 129, 104502