Stefan M Arseneau

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My research focuses on precision measurements of white dwarf stellar parameters and their use in stellar structure inference. I am especially interested in efficient uncertainty characterization with MCMC, statistical inference using large and noisy datasets, and identifying previously unknown sources of systematic uncertainty.

Education

PhD 2029 (Expected), Department of Astronomy, Boston University.
Advisor: J.J. Hermes

MA 2026 (Expected), Department of Astronomy, Boston University.

BS 2024, Department of Physics, Johns Hopkins University.

BA 2024, Department of Mathematics, Johns Hopkins University.

Positions

Graduate Research Fellow, Boston University, 2025–present.

Member, Sloan Digital Sky Survey V, 2022–present.

Observatory Allocations

ESO Very Large Telescope, UVES, 17.5 Hours (co-PI with Roberto Raddi), 2024
Constraints on the Gravitational Redshifts and Mass-Radius Relation of High-Mass White Dwarfs in Wide Binaries

Gemini Observatory, GMOS, 2 Hours, 2023
Probing the Mass-Radius Relation of White Dwarfs in Wide Binaries

Honors

Graduate Research Fellowship, Boston University, 2025.

Provost's Undergraduate Research Award, Johns Hopkins University, 2023.

Professional Service & Activities

Conference Organizer — Boston Area Planetary Science Meeting, Spring 2025 & Fall 2025

Open-Source Software

ember : Estimating Masses and Bolometric Properties of Evolved Remnants
MCMC parameter estimation for white dwarf atmospheres using externally calibrated Gaia BP/RP spectra.

corv : Compact Object Radial Velocities
The White Dwarf radial velocity pipeline used in the SDSS-V ASTRA pipeline.

Publications

First Author

2 **S.M. Arseneau**; J.J. Hermes; N.L. Zakamska; K. El-Badry; N.R. Crumpler; V. Chandra; G. Adamane Pallathadka; C. Badenes; B.T. Gäniscke; N. Gentile Fusillo, 2025, *Resolution-Corrected White Dwarf Gravitational Redshifts Validate SDSS-V Wavelength Calibration and Enable Accurate Mass-Radius Tests*, The Astrophysical Journal, 991 190 (arXiv:2508.04775) [ADS Link]

1 **S.M. Arseneau**; V. Chandra; H.C. Hwang; N.L. Zakamska; G.A. Pallathadka; N.R. Crumpler; J.J. Hermes; K. El-Badry; H-W. Rix; K.G. Stassun; B.T. Gänsicke; J.R. Brownstein; S. Morrison, 2025, *Measuring the Mass–Radius Relation of White Dwarfs Using Wide Binaries*, The Astrophysical Journal, 963, 17 (arXiv:2310.19866) [ADS Link]

Non-First Author

10 G.A. Pallathadka; V. Chandra; N.L. Zakamska; N.R. Crumpler; **S.M. Arseneau**; K. El-Badry; B.T. Gäniscke; Y. Zentai; J. J. Hermes; A.D. Schwope; C. Badenes; N.P. Gentile Fusillo; S. Morrison; T. Cunningham; P. Chakraborty; G Tovmasian; D Bizyaev; K. Pan; S.F. Anderson; S. Demasi, 2025, *Double White Dwarf Binaries in SDSS-V DR19 : A catalog of DA white dwarf binaries and constraints on the binary population*, The Astrophysical Journal, In Press (arXiv:2509.02906) [ADS Link]

9 K.R. Helson; C.Y.Y. Chan; **S. Arseneau**; A. Barlis; C.L. Bennett; T.M. Essinger-Hileman; H. Guo; T. Marriage; M.A. Quijada; A.E. Tokarz; S.L. Vivod; E.J. Wollack, 2025, *Diamond-loaded polyimide aerogel scattering filters and their applications in astrophysical and planetary science observations,* Review of Scientific Instruments, Submitted (arXiv:2508.20406) [ADS Link]

8 N.R. Crumpler; V. Chandra; N.L. Zakamska; G.A. Pallathadka; **S. Arseneau**; N.P. Gentile Fusillo; J. J. Hermes; C. Badenes; P. Chakraborty; B.T. Gänsicke; S. Morrison; H-W. Rix; S.P. Schmidt; A. Schwope; K.G. Stassun, 2025, *A Large Catalog of DA White Dwarf Characteristics Using SDSS and Gaia Observations,* The Astrophysical Journal, 989 24 (arXiv:2508.00818) [ADS Link]

7 G.A. Pallathadka; V. Chandra; B.T. Gänsicke; N.L. Zakamska; D. Koester; Y. Zentai; N.R. Crumpler; **S.M. Arseneau**; J.J. Hermes; M.R. Schreiber; K.G. Stassun; A. Schwope; K. El-Badry; G. Tovmassian; T. Cunningham; S. Morrison, 2025, *Double White Dwarf Binaries in SDSS-V DR19 : The discovery of a rare DA+DQ white dwarf binary with 31 hour orbital period,* The Astrophysical Journal, In Press (arXiv:2507.11618) [ADS Link]

6 J.A. Kollmeier; H.-W. Rix; C. Aerts; J. Aird; P.V. Alfaro; A. Almeida; S.F. Anderson; O.J. Arranz; **S.M. Arseneau** et al., 2025, *Sloan Digital Sky Survey-V: Pioneering Panoptic Spectroscopy,* The Astrophysical Journal, In Press (arXiv:2507.06989) [ADS Link]

5 SDSS Collaboration, G.A. Pallathadka, M. Aghakhanloo, J. Aird, A. Almeida, S. Amrita, F. Anders, S.F. Anderson, **S. Arseneau** et al., 2025, *The Nineteenth Data Release of the Sloan Digital Sky Survey,* The Astrophysical Journal, In Press (arXiv:2507.07093) [ADS Link]

4 N.R. Crumpler; V. Chandra; N.L. Zakamska; G.A. Pallathadka; **S. Arseneau**; N. Gentile Fusillo; J.J. Hermes; C. Badenes; P. Chakraborty; B.T. Gänsicke; S.P. Schmidt, 2024, *Detection of the Temperature Dependence of the White Dwarf Mass-Radius Relation with*

Gravitational Redshifts, The Astrophysical Journal, 977 2 (arXiv:2412.14331) [ADS Link]

3 G.A. Pallathadka; V. Chandra; N.L. Zakamska; H-C. Hwang; Y. Zentai; J.J. Hermes; K. El-Badry; B.T. Gänsicke; S. Morrison; N.R. Crumpler; **S. Arseneau**, 2024, *Discovery of A Proto-White Dwarf With A Massive Unseen Companion,* Astrophysical Journal, 968 1 (arXiv:2310.16313) [ADS Link]

2 A. Barlis; **S. Arseneau**; C.L. Bennett; T. Essinger-Hileman; H. Guo; K.R. Helson; T. Marriage; M.A. Quijada; A.E. Tokarz; S.L. Vivod; E.J.Wollack, 2022, *Characterization of aerogel scattering filters for astronomical telescopes,* Proc. SPIE 12190, Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XI, 121902I (arXiv:2208.04257) [ADS Link]

1 K.R. Helson; **S. Arseneau**; A. Barlis; C.L. Bennett; T.M. Essinger-Hileman; H. Guo; T. Marriage; M.A. Quijada; A.E. Tokarz; S.L. Vivod; E.J. Wollack, 2022, *Novel infrared-blocking aerogel scattering filters and their applications in astrophysical and planetary science,* Proc. SPIE 12190, Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XI, 121901P (arXiv:2208.03755) [ADS Link]

Non-Peer Reviewed Publications

1 G.A. Pallathadka; N.L. Zakamska; V. Chandra; N.R. Crumpler; **S.M. Arseneau**; J.J. Hermes; B.T. Gänsicke; N. Gentile Fusillo; 2025. Double Degenerate WD Binaries in SDSS-V DR19. American Astronomical Society Meeting Abstracts, 245, 257.04.

Professional References

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Carles Badenes (University of Pittsburgh) badenes@pitt.edu