Christopher Sheridan

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Current Institution

McGill University/Trottier Space Institute
3550 Rue University, Office 030, Montreal, QC, H3A 0C6

Research Interests

Supermassive black holes, active galactic nuclei, and relativistic jets; X-ray variability and spectroscopy, multi-wavelength analysis; multiple star systems and eclpising binaries; late-stage stars and black hole progenitors.

Education

McGill University, Montréal, QC, Canada May 2030 (Expected)
PhD (Thesis), Physics
Supervisor: Dr. Daryl Haggard

Villanova University, Villanova, PA, USA May 2024
B.S. Astronomy & Astrophysics
Minors in Physics and Mathematics
Magna Cum Laude - GPA 3.79/4.0

Research Experience

X-ray Variability in the Core and Jet of M87 2021–Present
Advisor: Dr. Joey Neilsen, Villanova University

- Modeled X-ray spectra of M87's core and relativistic jet using spectral analysis software (ISIS)
- Spearheaded advancement upon past X-ray modeling of M87; contributed refined model to the X-ray portion of the EHT Multiwavelength Working Group broadband SED model of M87
- Paper to be submitted to the Astrophysical Journal in preparation

Calibrating the Binary Population Through Stellar Population Synthesis 2024–2025
Advisor: Dr. Andrej Prša, Villanova University

- Developed synthetic populations of binary star systems and subsets of eclipsing binaries using custom prescriptions
- Used machine learning to optimize prescriptions for underlying binary populations by comparing with the Kepler EB Catalog
- Presented results at 245th AAS Meeting

Variability in Red Supergiant Stars: Long and Short Period Analysis 2021
Advisor: Dr. Edward Guinan, Villanova University

- Conducted period analysis on archival photometry of 22 red supergiant stars
- Drew conclusions on the Period-Luminosity Relationship in red supergiants
- Presented results at 240th AAS Meeting

Professional Memberships

Event Horizon Telescope Collaboration - Member 2025–Present

- Multi-wavelength Working Group
- Non-horizon/AGN Working Group

American Physical Society - Member 2024–Present
Sigma Pi Sigma Physics Honor Society - Member 2024–Present
American Astronomical Society - Member 2022–Present

Skills

Languages & Software:
Python, Bash, LaTeX, Linux, `HEAsoft`, `ISIS` Interactive Spectral Interpretation Software, `CIAO`

Packages:
`NumPy, Matplotlib, pandas, scipy, astropy, emcee`

Publications

EHT Multiwavelength Working Group et al. (incl. **Sheridan, C.**), *Broadband Multi-wavelength Properties of M87 during the 2018 EHT Campaign and a Very High Energy Flaring Episode*, 2024, Astronomy & Astrophysics, 692, 140

Publications in prep.

Sheridan, C., Neilsen, J., Markoff, S., Haggard, D., Nowak, M., *X-ray Variability in the Core and Jet of M87*, in prep.

Conference Proceedings

Poster: **Sheridan, C.** & Prša, A., *Calibrating the Binary Population Through Stellar Population Synthesis*, 2025, American Astronomical Society, 245, 249.08

Poster: **Sheridan, C.**, Neilsen, J., Haggard, D., Markoff, S., & Nowak, M., *X-ray Variability and the Spectrum of M87*, 2024, American Astronomical Society, 243, 110.03

Poster: **Sheridan, C.**, *Stars on the Verge: Analyzing Long-term Photometry of Galactic Red Supergiant SN-II Progenitors*, 2022, American Astronomical Society, 240, 204.11

Poster: Guinan, E. et al. (incl. **Sheridan, C.**), *Betelgeuse After the Fall - Analysis of 185-yrs of Photometry*, 2022, American Astronomical Society, 240, 415.03

Contributed Talks

Sheridan, C. and Neilsen, J., *X-ray Variability and the Spectrum of M87*, 2023, AstroPhilly '23, Villanova University.

Fellowships & Awards

Donald G. Hurst Fellowship, McGill University 2025
$8,860 CAD, Awarded for academic and research excellence in Physics.

Phi Sigma Pi National Honor Fraternity - Villanova Chapter 2021–2024
Alumnus, Chapter Initiate Advisor (2023), Executive Board Member.

Undergraduate Research Fellowship, Villanova University. 2021
$3,500 USD, Summer research grant, awarded as freshman

Edwin F. Bailey Scholarship, Villanova University. 2021
$10,000 USD, Awarded to top underclassman in Astrophysics Department.

Research Positions

Research Assistant, Villanova University Sept. 2024– May 2025
Advisor: Dr. Andrej Prša

Undergraduate Research Assistant, Villanova University Summer 2023
Advisor: Dr. Joey Neilsen (cont. from Summer 2022)

Undergraduate Research Assistant, Villanova University Summer 2022
Advisor: Dr. Joey Neilsen

Additional Experience

Teaching Assistant McGill University 2025–Present
PHYS251: Honors Classical Mechanics, PHYS186: Astrobiology

Contracted STEM Tutor - Teacher Time To Go 2024–2025
Individually tutored 20+ high-school students in STEM courses

Mendel Science Experience Tutor - Villanova University 2023–2024
Individual tutoring for students in introductory astronomy courses

Villanova Observatory Attendant - Villanova University 2021–2024
Gave tours of observatory facilities, educated visitors on astronomical events of interest, gained experience operating telescopes

Teaching Assistant - Villanova University 2021–2024
MSE2101: Life in the Universe, MSE2102: Planetary Skies, MSE2103: How Old is the Universe?

Outreach & Service

McGill Sea to Space, General Volunteer — September 2025
Helped run day-long event engaging young learners from the Montréal community, educating on basic physics topics

Phi Sigma Pi National Honor Fraternity, Chapter Initiate Advisor — 2023
Oversaw induction of 60 new members into the Chapter, ensuring an inclusive and equitable environment in coordination with Chapter DEI Advisor

Phi Sigma Pi National Honor Fraternity, NOVAdance Captain — 2023
Led Chapter fundraising efforts in contribution to NOVAdance, an annual year-long Villanova fundraising campaign supporting families of those battling childhood cancer

Phi Sigma Pi National Honor Fraternity, Volunteer — 2021–2024
Participated in and organized numerous volunteering an fundraising events at Villanova University and in the surrounding community

References

Dr. Daryl Haggard, Associate Professor of Physics
McGill University, (514) 398-6497, daryl.haggard@mcgill.ca

Dr. Joey Neilsen, Associate Professor of Physics
Villanova University, (610) 519-6497, joseph.neilsen@villanova.edu

Dr. Andrej Prša, Professor of Astronomy & Astrophysics
Villanova University, (610) 519-4822, aprsa@villanova.edu

Dr. Edward Guinan, Professor of Astronomy & Astrophysics
Villanova University, (610) 519-4823, edward.guinan@villanova.edu