

Dustin K. Swarm
Department of Physics & Astronomy
Curriculum Vitae as of January 13, 2026

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EDUCATION AND PROFESSIONAL HISTORY

Higher Education

2023 **PhD**, Physics (Astronomy), University of Iowa
Thesis: Data-Driven Exploration in X-Ray Astronomy: Investigating Intermediate Polar Candidates Found Among Unusual Objects Selected by an Unsupervised Outlier Identification Algorithm

2018 **BA**, Physics & Mathematics, Magna Cum Laude, Greenville University

2010 **BS**, Spanish Education, Magna Cum Laude, Greenville College

Professional and Academic Positions

2025 – Present **Assistant Professor**, University of Iowa

2023 – 2025 **Postdoctoral Research Scholar**, Department of Physics & Astronomy, University of Iowa

2010 – 2016 **Teacher**, Bond County Community Unit 2 High School, Greenville, IL

Honors and Awards

2024 – Present [Nancy Grace Roman Technology Fellow](#), NASA Astrophysics Division, early career award designed to foster future leaders in astrophysical instrumentation

Spring 2023 Ballard & Seashore Dissertation Fellowship, Graduate College, University of Iowa

2020 – 2021 Graduate Student Fellowship, Iowa Space Grant Consortium, awarded for my research “Investigating Unique X-ray Sources Identified Via Machine Learning”

2019 – 2020 Graduate Student Fellowship, Iowa Space Grant Consortium, awarded for my research “Employing Machine Learning Algorithms to Search for Unique X-ray Sources”

2018 – 2019 John & Stacey Wahl Scholarship, Department of Physics & Astronomy, University of Iowa, awarded to students studying physics who are married and have children

2017 – 2018 Ralph J. Miller Award, Department of Physics, Greenville University, award and scholarship given to the top student in the physics department

Memberships

2024 – Present American Astronomical Society (AAS)

2025 – Present Society of Photo-Optical Instrumentation Engineers (SPIE)

2025 – Present American Physical Society (APS)

TEACHING

Courses Taught at the University of Iowa

Term	Course#	Title	Final Enrollment
Fall 2025	ASTR:4850	Observational Techniques in Astronomy	18
Summer 2025	URES:4180	Edge of Space Academy	16

Graduate Student Mentoring

Name	Years	Degree	Context	Achievements/Outcomes
John Silva	Summer 2025	Pre-Comp	Andrew Nelson Summer Fellowship	---

Undergraduate Student Mentoring

Name	Years	Degree	Context	Achievements/Outcomes
Alexandrea Moreno	Spring 2025	N/A	X-ray Astronomy Independent Study	---

Graduate Student Examination Committee Member

Name	Term	Examination	Outcome
Jacob Payne	Nov. 2025 – Present	Comprehensive Exam, MS Thesis Defense	Completed
Rachel Pauline	Nov. 2025 – Present	Comprehensive Exam	Completed
Brendan Powers	<i>est.</i> April 2026	Comprehensive Exam	In Process

SCHOLARSHIP – [ORCID ID](#)**Publications**

CLAS * System * = Senior Author/Major Contribution, ** = Secondary Contribution *** = Equal Contribution, **** = Minor Contribution

Refereed Articles

8. * Swarm, D.K. and DeRoo, C.T. (in prep.). X-ray Spectral Analysis of Cataclysmic Variable Candidates in the Galactic Center. *The Astrophysical Journal*.
7. *** Gunderson, S.J. et al. (in prep.). A XRISM Observation of π Aquarii: Spectral and Temporal Properties. *The Astrophysical Journal*.
6. * Swarm, D.K. et al. (submitted). Prospects for Soft Gamma-Ray Focusing Optics via Multilayer-Coated Grazing-Incidence Mirrors. *Journal of High Energy Astrophysics*.
5. *** Gunderson, S.J. et al. (2025). X-Ray Polarimetry of Accreting White Dwarfs: A Case Study of EX Hydrae. *The Astrophysical Journal*, 993(2), 248. <https://iopscience.iop.org/article/10.3847/1538-4357/ae11b5>
4. **** Huenemoerder, D.P. et al. (2025). Chandra/HETG and NuSTAR Observations of V750 Ara, a γ Cas-type Star. *The Astrophysical Journal*, 993(2), 220. <https://iopscience.iop.org/article/10.3847/1538-4357/ae10b5>
3. *** Gunderson, S. et al. (2025). A Time-dependent Spectral Analysis of γ Cassiopeiae. *The Astrophysical Journal*, 978(1), 105. <https://iopscience.iop.org/article/10.3847/1538-4357/ad944e>
2. *** Huenemoerder, D.P. et al. (2024). Chandra HETG X-Ray Spectra and Variability of π Aqr, a γ Cas-Type Be Star. *The Astrophysical Journal Letters*, 966(2), L23. <https://iopscience.iop.org/article/10.3847/2041-8213/ad4095>
1. * Swarm, D.K. et al. (2023). Searching for Outliers in the Chandra Source Catalog. *Monthly Notices of the Royal Astronomical Society*, 516(3), 4324. <https://academic.oup.com/mnras/article/516/3/4324/6691699>

Non-refereed Articles

1. * DeRoo, C.T. et al. (2019). arcusTrace: Modular Raytracing Software for the Arcus X-ray Spectrometer. *Proceedings of SPIE*, 11116, 11116F. <https://doi-org.proxy.lib.uiowa.edu/10.1117/12.2528497>

Areas of Research Interest

High-Energy Astrophysics
 Accreting Compact Objects (White Dwarfs, Neutron Stars, Black Holes)
 Astrophysical Positron Generation and Annihilation
 X-ray Astronomical Optics

Gamma-ray Astronomical Optics
 Astronomical Instrumentation Design and Simulation
 Machine Learning Applications in Astrophysics

Lectures and Conference Presentations

PRESENTATION * SYSTEM: * = INVITED TALK, ** = CONTRIBUTED TALK

Colloquia / Seminars

- Sept. 2025 ** University of Iowa – Astronomy & Space Physics Seminar, *Designing New Optics to Investigate Galactic Positron Generation*
- March 2025 * Massachusetts Institute of Technology – High Energy Astrophysics Group Seminar, *Searching for Unusual Objects in the CSC*
- Oct. 2024 ** University of Iowa – Department of Physics & Astronomy Colloquium, *Harder, Better, Sharper, Broader: Designing New Optics for the MeV Gap*
- Oct. 2024 ** University of Iowa – Astronomy & Space Physics Seminar, *Leveraging the Chandra Source Catalog to Investigate Unidentified X-ray Objects*
- July 2024 * Macalester-Augustana-Coe Remote Observatory Consortium – Summer Research Program Seminar, *Cataclysmic Variables and ST Leonis Minoris*
- Aug. 2019 ** University of Iowa – Astronomy & Space Physics Seminar, *Modular Raytracing Software for the Arcus X-ray Spectrometer*

Conference Presentations w/o Proceedings – Presenter

- Oct. 2025 ** Swarm, D.K. et al., *Developing Multilayer-coated Optics for a Soft Gamma-ray Focusing Telescope*, High Energy Astrophysics Division Meeting 22, American Astronomical Society, St. Louis, MO, USA
- Aug. 2025 ** Swarm, D.K. et al., *Designing Multilayer-coated Optics for a Soft Gamma-ray Focusing Imager Telescope*, SPIE Optics + Photonics, Society of Photo-Optical Instrumentation Engineers, San Diego, CA, USA <https://doi.org/10.1117/12.3063282>
- April 2025 ** Swarm, D.K. et al., *Multilayer Optics Design and Simulation for a 511 keV Focusing Imager Telescope*, International Workshop on Physics of X-ray and Neutron Multilayer Systems 2025, Università degli Studi di Padova, Padua, Italy
- Jan. 2025 ** Swarm, D.K. and DeRoo, C.T., *X-ray Spectral Analysis of Intermediate Polar Candidates in the Galactic Center*, American Astronomical Society 245th Meeting, American Astronomical Society, National Harbor, MD, USA
- Nov. 2023 ** Swarm, D.K. et al., *Outlier Identification in the Chandra Source Catalog*, Astronomical Data Analysis Software & Systems XXXIII, University of Arizona, Tucson, AZ, USA
- Oct. 2022 ** Swarm, D.K. et al., *Outlier Identification in the Chandra Source Catalog*, 2022 Mid-American Regional Astrophysics Conference, University of Arkansas, Fayetteville, AR, USA
- March 2022 ** Swarm, D.K. et al., *Searching for Unusual Sources in the Chandra Source Catalog*, High Energy Astrophysics Division Meeting 19, American Astronomical Society, Pittsburgh, PA, USA
- April 2020 ** Swarm, D.K. et al., *Employing an Unsupervised Outlier Detection Algorithm to the Chandra Source Catalog*, ISGC Student Research Symposium, Iowa Space Grant Consortium, Iowa City, IA, USA
- Aug. 2019 ** Swarm, D.K. et al., *Modular Raytracing Software for the Arcus X-ray Spectrometer*, SPIE Optics + Photonics, Society of Photo-Optical Instrumentation Engineers, San Diego, CA, USA
- April 2018 ** Choi, H. et al., *A Welcher-Weg Quantum Eraser Using Hyperentanglement*, American Physical Society Spring Meeting, American Physical Society, Columbus, OH, USA

Conference Presentations w/o Proceedings – Coauthor

- Oct. 2025 ** DeRoo, C.T. et al., *Maturing Technology for a Future Soft X-ray Bragg Polarimetry Mission*, High Energy Astrophysics Division Meeting 22, American Astronomical Society, St. Louis, MO, USA
- Aug. 2025 ** DeRoo, C.T. et al., *Maturing Technology for a Soft X-ray Bragg Polarimeter*, SPIE Optics + Photonics, Society of Photo-Optical Instrumentation Engineers, San Diego, CA, USA, <https://doi.org/10.1117/12.3064027>
- April 2025 ** DeRoo, C.T. et al., *Using Multilayers for Soft X-ray Polarimetry*, International Workshop on Physics of X-ray and Neutron Multilayer Systems 2025, Università degli Studi di Padova, Padua, Italy
- April 2018 ** Choi, H. et al., *A Welcher-Weg Quantum Eraser Using Hyperentanglement*, American Physical Society Spring Meeting, American Physical Society, Columbus, OH, USA

Grants and Contracts**Funding Awarded to University of Iowa To Date: \$1,240,124****Funded**

(LEFT COLUMN INDICATES PERIOD OF PERFORMANCE)

- July 2026 *Old Gold Summer Fellowship*
Role: Principal Investigator
Funding Organization: University of Iowa – College of Liberal Arts & Sciences
Award Duration: 1 Month
Award Amount (Controlled): \$6,000 (\$6,000)
- Oct. 2025 – Present *Developing a Gamma Ray Reflectometer for 511 keV Multilayer Performance Characterization*
Role: Principal Investigator
Funding Organization: NASA Science Mission Directorate (Nancy Grace Roman Technology Fellowship)
Award Duration: 36 Months
Award Amount (Controlled): \$499,954 (\$499,954)
- July 2025 – Present *Testing the White Dwarf Hypothesis for γ Cas Companions*
Role: Co-Investigator
Principal Investigator: Sean Gunderson
Funding Organization: NASA Science Mission Directorate (NICER Guest Observer)
Award Duration: 12 Months
- July 2025 – Present *Investigating the Circum-Binary Environment of IGR J16320-4751 Through X-ray Tomography*
Role: Co-Investigator
Principal Investigator: Pragati Pradhan
Funding Organization: NASA Science Mission Directorate (NICER Guest Observer)
Award Duration: 12 Months
- July 2025 – Present *A First Look at Colliding Wind Binary WR 133 with NICER*
Role: Co-Investigator
Principal Investigator: Pragati Pradhan
Funding Organization: NASA Science Mission Directorate (NICER Guest Observer)
Award Duration: 12 Months

- July 2025 – Present *X-ray Variability of the Unusual Wolf-Rayet Star WR6 with NICER*
 Role: Co-Investigator
 Principal Investigator: Pragati Pradhan
 Funding Organization: NASA Science Mission Directorate (NICER Guest Observer)
 Award Duration: 12 Months
- Jan. 2025 – Dec. 2025 *X-ray Polarimetry of Accreting White Dwarfs: A Case Study of EX Hydrae*
 Role: Co-Investigator
 Principal Investigator: Sean Gunderson
 Funding Agency: NASA Science Mission Directorate (IXPE Guest Observer)
 Award Duration: 12 Months
- Oct. 2024 – Present *Designing and Fabricating Multilayer Optics to Enable a Future 511 keV Focusing Imager*
 Role: Principal Investigator
 Funding Organization: NASA Science Mission Directorate (APRA)
 Award Duration: 36 Months
 Award Amount (Controlled): \$989,608 (\$740,170)

Under Review

(LEFT COLUMN INDICATES PROPOSED PERIOD OF PERFORMANCE)

- 2025 – 2028 *Developing Microcalorimeter Detector Arrays for Gamma-ray Line Astronomy Missions with Sub-keV Energy Resolutions*
 Role: Collaborator
 Principal Investigator: Henric Krawczynski
 Funding Organization: NASA Science Mission Directorate (APRA)
 Project Duration: 36 Months

Declined

(LEFT COLUMN INDICATES SUBMISSION DATE)

- Nov. 2025 *Investment in Strategic Priorities (ISP) Request for Funding*
 Role: Principal Investigator
 Funding Organization: University of Iowa – Office of the Executive Vice President and Provost
 Proposed Award Amount (Proposed Controlled): \$5,000 (\$5,000)
- June 2025 *Foundations for a Gamma-ray Focusing Telescope*
 Role: Principal Investigator
 Funding Organization: Iowa Space Grant Consortium (Faculty Seed Grant)
 Proposed Award Amount (Proposed Controlled): \$80,000 (\$80,000)
- March 2025 *StokeSat – A Small Satellite for Soft X-ray Polarimetry*
 Role: Instrument Scientist
 Principal Investigator: Casey DeRoo
 Funding Organization: NASA Science Mission Directorate (Pioneers)
 Proposed Award Amount (Proposed Controlled): \$20,000,000 (\$14,509,854)
- Feb. 2025 *Large-Format X-ray Zone Plates: Enabling Flight-like Calibrations for Future Missions*
 Role: Co-Investigator
 Principal Investigator: Fabien Grise

Funding Organization: NASA Science Mission Directorate (APRA)
 Proposed Award Amount (Proposed Controlled): \$1,267,903 (\$167,973)

- Feb. 2025 *High-Energy Multilayer Coatings for Silicon-Pore X-ray Optics*
 Role: Co-Investigator
 Principal Investigator: Laura Brennemen
 Funding Organization: NASA Science Mission Directorate (APRA)
 Proposed Award Amount Controlled: \$153,386
- Jan. 2024 *High-Energy Multilayer Coatings for Silicon-Pore X-ray Optics*
 Role: Co-Investigator
 Principal Investigator: Laura Brennemen
 Funding Organization: NASA Science Mission Directorate (APRA)
 Proposed Award Amount (Proposed Controlled): \$1,149,252 (\$65,066)
- Jan. 2024 *Developing Curved Customized Gratings for High Energy Spectroscopy*
 Role: Co-Investigator
 Principal Investigator: Casey DeRoo
 Funding Organization: NASA Science Mission Directorate (APRA)
 Proposed Award Amount (Proposed Controlled): \$1,793,764 (\$130,134)

SERVICE

Profession

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| 2025 | AAS Journals, The Astrophysical Journal, Manuscript Reviewer |
| 2025 | European Southern Observatory Journal, Astronomy & Astrophysics, Manuscript Reviewer |
| 2024 | NASA Astrophysics Division, Panel Reviewer |
| 2024 | University Space Research Association (USRA), Panel Reviewer |

Department

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| Fall 2025 – Present | Graduate Recruiting and Admissions Committee, Member |
| Fall 2025 – Present | AAS Agents Program (AAS), Department Agent <ul style="list-style-type: none"> Departmental liaison for AAS, the preeminent organization for professional astronomers in the United States |
| Fall 2025 | Tenure-Track Faculty Search Committee, Member |
| Spring 2025 | Council of Institutions (USRA), Institutional Representative <ul style="list-style-type: none"> Served as the Institutional Representative for the annual Council of Institutions meeting to vote and provide organizational oversight |

Professional Development Activities

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| Fall 2025 – Present | Early Career Faculty Academy, Participant, University of Iowa Center for Teaching |
| Fall 2025 | Write Winning Grant Proposals Seminar, Participant, Grant Writers Seminars and Workshops & University of Iowa Research Development Office |