

MAURA K. SHEA

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EDUCATION

Georgia State University

Doctor of Philosophy in Astronomy.

2027

Master of Science in Physics with a concentration in Astronomy.

2023

Wellesley College

Bachelor of Arts in Astrophysics. Minor in Jazz Music.

2020

RESEARCH EXPERIENCE

Graduate Research Assistant

Fall 2021 – Present

Georgia State University

Prof. Mike Crenshaw

- Analyze the outflow, rotational, and tidal flow kinematics of the active galactic nucleus (AGN) NGC 7319 in Stephan's Quintet using optical and near-IR spectroscopic data. Investigate the influence of AGN in compact galaxy groups.
- Observe stars and galaxies using the 3.5-meter telescope at the Apache Point Observatory via in-person (9 half nights) and remote (>30 half nights) observing runs. Reduce data using IRAF. Analyze data using Python and IDL.

Research Observer

Spring 2018 – Spring 2020

Wellesley College Whitin Observatory

Prof. Kim McLeod

- Operated Whitin Observatory's 0.7-m research telescope to observe transiting exoplanet candidates. Used differential photometry to generate light curves of exoplanet candidates for KELT & TESS Follow Up Networks.

Student Researcher

Fall 2019

Wellesley College

Prof. Richard French

- Reconstructed ring features in Saturn's A and B Rings that were caused by resonances from three of Saturn's moons: Janus, Epimetheus, and Mimas. Analyzed occultation data from the *Cassini* VIMS, UVIS, and RSS instruments.

REU Student Researcher

Summer 2019

University of Birmingham, England

Dr. Conor Mow-Lowry

- Developed a system of seismic detection instruments to improve the Laser Interferometer Gravitational-Wave Observatory's (LIGO) sensitivity in low frequencies through an actively controlled seismic isolation system.

REU Student Researcher

Summer 2018

MIT Haystack Observatory

Dr. Vincent Fish, Dr. Kazu Akiyama

- Modeled the potential benefits of adding space-based telescopes to the Event Horizon Telescope to optimize its resolution for observing fainter and more distant sources.

REU Student Researcher

Summer 2017

Haverford College

Prof. Daniel Grin

- Modeled the matter power spectrum for varying levels of density fluctuations in the early Universe.

TEACHING

Instructor of Record

Spring 2026

Georgia State University

- Instructor, *ASTR 1000: Introduction to the Universe*. Covers material from Solar System astronomy to Cosmology. Class size of ~60 students. Focus on active learning and incorporating the think-pair-share method.

Co-Instructor

Spring 2025

Georgia State University

- Co-Instructor, *ASTR 1000: Introduction to the Universe*, hybrid course. Monitored the online section to answer questions and encourage participation. Graded quizzes. Served as the primary lecturer for several classes.

Graduate Teaching Assistant

Fall 2021 – Fall 2024

Georgia State University

- Guest lecturer, *ASTR 1020: Stellar and Galactic Astronomy*. Taught 2 classes.
- Lab instructor, *ASTR 1020*. 7 sections total of ~24 students each.
- Lab instructor, *ASTR 1010: Astronomy of the Solar System*. 7 sections total of ~24 students each, including online sections.

Physics Grader

Spring 2018 – Spring 2019

Wellesley College Physics Department

- Correct problem sets for 15 to 25 students. Graded for *Fundamentals of Electricity, Magnetism, and Optics; Principles and Applications of Mechanics*; and *Intermediate Mechanics*. Provide insights to improve problem-solving techniques.

Night Assistant

Fall 2017

Wellesley College Whittin Observatory

- Operate the historic 6" and 12" Clark refracting telescopes to introductory astronomy class students to observe the Moon, Planets, and Deep Sky objects. Teach constellations and administer constellation quizzes.

MENTORING**Barbara Carson** – Undergraduate Student

Summer 2025 – Present

- *Searching for Dual Active Galactic Nuclei in 2MASX J18252853+7208597*

Daijha Sankey – Undergraduate Student

Fall 2024 – Summer 2025

- *Probing the Nature of Low-Luminosity AGN Feedback in the LINER Galaxy NGC 1052*

Jacob Tutterow – Master's Student

Spring 2024 – Summer 2025

- *The Shape of AGN-Driven Winds in the Seyfert Galaxy NGC 3516*

Kesha Patel – REU Student

Summer 2024

- *Searching for Extended Ionized Outflows in the Quasar IRAS F11119+3257*

Madeline Davis – REU Student

Summer 2023

- *Disentangling the Kinematics of NGC 4258*

Nicolas Ferree – REU Student

Summer 2022

- *Gas Outflow Kinematics in NGC 3516*

OUTREACH & SERVICE**Undergraduate Research Coordinator**

February 2023 – August 2025

Georgia State University

- Thoroughly review and assess >370 REU applications each year for the summer program. Select recipients for four GSU internal fellowships.
- Develop weekly professional development seminars for the 6 REU students and 20 GSU interns. Topics include: reading papers; scientific writing; using LaTeX; creating compelling presentations and posters; panels on graduate school, careers, and networking; etc.
- Organize weekly lunch talks so the students can develop a breadth of understanding of different research areas.
- Assist in training students to observe with the ARC 3.5-m telescope at APO.

Astronomy Peer Advising Leaders (AstroPAL)

August 2023 – Present

Georgia State University

- President (August 2024 - present). Applied for university funding and maintained the budget for events. Lead monthly meetings and delegated tasks for upcoming events. Organize – and lead some – focus groups on topics of concern for young graduate students.
- Serve as a mentor for younger graduate students in the AstroPAL program, providing advice and support during monthly one-on-one meetings.

Diversity, Equity, and Inclusion Taskforce

January 2024 – Present

Georgia State University

- Serve as a confidential space for department members to voice concerns and advocate for necessary changes.
- Organize colloquia addressing topics such as Sexual Harassment Training and Conflict Resolution.
- Create social media posts to bring awareness to and celebrate minorities in Astronomy.

Women in Physics

January 2023 – June 2025

Georgia State University

- Serve as Vice President for the GSU branch of Women in Physics (September 2023 - June 2025).
- Coordinate events to educate undergraduate women and minorities in physics within GSU. Examples include coffee hours with colloquium speakers, social events, and panels on applying to internships and graduate school.
- Attended the Conference for Undergraduate Women in Physics to serve as a mentor and panelist (“How to get Involved in Undergraduate Research”; “Maintaining Work-Life Balance”) at in-person (Auburn University, 2023; Georgia Institute of Technology, 2024) and virtual CUWiP.

Whitin Observatory Public Night Volunteer

January 2017 – March 2020

Wellesley College Whitin Observatory

- Assist at the monthly Whitin Observatory Public Nights. Open the telescopes to visitors, showing the Moon, planets, star clusters, and deep space objects. Discuss relevant scientific and historical facts for each object.
- Plan and execute space-themed educational activities for a broad range of ages and scientific knowledge. Answer general astronomy questions.

OBSERVING EXPERIENCE

3.5-m Astrophysical Research Consortium Telescope

January 2022 – Present

Apache Point Observatory, New Mexico

- 9 in-person nights, >30 remote nights. Long-slit spectrograph observations of galaxies.

1.5-m and 0.9-m Small and Moderate Aperture Research Telescope System

February 2025 – March 2025

Cerro Tololo Inter-American Observatory, Chile

- 12 nights (1.5-m). Echelle spectrograph observations of stars.
- 3 nights (0.9-m). Photometric observations of stars.

0.7-m Planewave Telescope

January 2018 – March 2020

Whitin Observatory, Massachusetts

- ~40 nights. Photometric observations, including supernovae, asteroids, and exoplanet host candidates.

6- and 12-inch Historic Telescopes

January 2017 – March 2020

Whitin Observatory, Massachusetts

- ~50 nights. Eye piece observing of the Moon, planets, and Deep Sky objects.

TECHNICAL STRENGTHS

Languages	Python, basic IDL, Java, and JavaScript
Software & Tools	LaTeX, IRAF, AstrolmageJ, SAOImage DS9, Maxim DL, SkyX, TOPCAT, Aladin

HONORS & AWARDS

Travel Support Award, ZIHUAGN: central kpc region conference, \$1,000	2025
AAS Chambliss Astronomy Achievement Award	2024
NSF Graduate Research Fellowship Program - Honorable Mention	2023
NASA Massachusetts Space Grant	2017-2019

WORKSHOPS

Teaching Strategies that Work: FTI Workshop for Educators, <i>AAS and APS</i> .	2025
Future Faculty Workshop, <i>Northeastern University</i> .	2024
Effective Astronomy Visualizations for Research, Outreach, and Learning, <i>241st AAS Meeting</i> .	2023
Conflict Resolution and Communication Skills, <i>GSU</i>	2023
Hands-on Machine Learning for Astronomers, <i>235th AAS Meeting</i> .	2020
Using Python and Astropy for Astronomical Data Analysis, <i>233rd AAS Meeting</i> .	2019

PRESENTATIONS

Talks

Stephan's Quintet: AGN Outflows versus Galactic Tidal Flows on Kiloparsec Scales. (2025, October). Presentation at the ZihuAGN Redemption: Central kpc Region meeting, Zihuatanejo, Mexico.

Probing AGN Feedback in a Compact Galaxy Group: The Case of Stephan's Quintet and NGC 7319. (2024, September). Presentation at the Young Astronomers on Galactic Nuclei Conference, Como, Italy.

Kinematic Maps of the Ionized Gas in Stephan's Quintet and its Active Galaxy NGC 7319. (2023, June). Presentation at the AGN Winds on the Chesapeake Conference, Easton, Maryland.

Studying Isocurvature Fluctuations through Galaxy Surveys. (2017, October). Presentation at the KECK Northeast Astronomy Consortium Conference, Hamilton, New York.

Posters

Probing AGN Feeding & Feedback in a Compact Galaxy Group: The Case of Stephan's Quintet and NGC 7319. (2024, January). iPoster session presented at the 243rd American Astronomical Society Meeting, New Orleans, Louisiana.
Chambliss Award Winning Poster.

Ionized Gas Flows in the Compact Galaxy Group Stephan's Quintet and its Active Galaxy NGC 7319. (2023, January). iPoster session presented at the 241st American Astronomical Society Meeting, Seattle, Washington.

Improving LIGO's Sensitivity Through an Actively Controlled Seismic Isolation System. (2020, January). Poster session presented at the 235th American Astronomical Society Meeting, Honolulu, Hawai'i.

Black Hole Imaging with Space-Based Telescopes. (2019, January). Poster session presented at the 233rd American Astronomical Society Meeting, Seattle, Washington.

Black Hole Imaging with Space-Based Telescopes. (2018, September). Poster session presented at the KECK Northeast Astronomy Consortium Conference, Middlebury, Vermont.

Outreach Talks

A Tour Through the Universe with the James Webb Space Telescope (2025, December). Space Night at the East Quabbin Land Trust, Hardwick, MA. With Aman Kar.

- Ancient Astronomy Part II: Egyptian and Mesoamerican Astronomy – Bringing the Heavens Down to Earth.* (2025, June). Astronomy on Tap Lecture at Three Taverns, Decatur, GA. With Emma Galligan.
- Supermassive Influence: How Black Holes Shape their Galaxy.* (2025, March). Tellus Symposium: Astronomy at All Scales, Tellus Science Museum, Cartersville, GA.
- Stephan’s Quintet: Rotation & Outflows & Tidal Flows, Oh My!* (2026, January; 2025, January; 2024, February). 4th, 5th, & 6th Annual One Minute Colloquium, Georgia State University, Atlanta, GA.
- AGN Feedback in Stephan’s Quintet.* (2024, July). "Galaxies to Gluons" Summer lunch talk series, Georgia State University, Atlanta, GA.
- Ancient Astronomy Part I: Greek and Mesopotamian Astronomy – How Mythology Became a Science.* (2024, June). Astronomy on Tap Lecture at Three Taverns, Decatur, GA. With Emma Galligan.
- All about the James Webb Space Telescope.* (2023, December). Public Lecture at the Wendell Free Library, Wendell, MA.
- Understanding Images from the James Webb Space Telescope.* (2022, December). Public Lecture at the New Salem Public Library, New Salem, MA.

REFEREED PUBLICATIONS

- [1] *An Analysis of AGN Feedback in the Compact Galaxy Group Stephan’s Quintet.* **M.K. Shea**, D.M. Crenshaw, T.C. Fisher, et al. (2025). *The Astrophysical Journal*, Volume 997, Issue 2. <https://doi.org/10.3847/1538-4357/ae2796>
- [2] *Spatially Resolved, Multiphase Mass Outflows of the Seyfert 1 Galaxy NGC 3227.* J. Falcone, D.M. Crenshaw, M. Revalski, [...] **M.K. Shea**, et al. (2025). *The Astrophysical Journal*, Volume 997, Issue 1. <https://doi.org/10.3847/1538-4357/ae1c3b>
- [3] *The Shape of AGN-Driven Winds in the Seyfert Galaxy NGC 3516.* J. Tutterow, N. Ferree, D.M. Crenshaw, [...] **M.K. Shea**, et al. (2025). *The Astrophysical Journal*, Volume 990, Issue 2. <https://doi.org/10.3847/1538-4357/adf055>
- [4] *Quantifying Feedback from Narrow Line Region Outflows in Nearby Active Galaxies. V. The Expanded Sample.* M. Revalski, D.M. Crenshaw, G.E. Polack, [...] **M.K. Shea**. (2025). *The Astrophysical Journal*, Volume 984, Issue 1. <https://doi.org/10.3847/1538-4357/adc131>
- [5] *An Analysis of AGN-Driven Outflows in the Seyfert 1 Galaxy NGC 3227.* J. Falcone, D.M. Crenshaw, T.C. Fisher, [...] **M.K. Shea**, et al. (2024). *The Astrophysical Journal*, Volume 971, Issue 1. <https://doi.org/10.3847/1538-4357/ad5283>
- [6] *Imaging Black Holes and Jets with a VLBI Array Including Multiple Space-Based Telescopes.* V. Fish, **M.K. Shea**, and K. Akiyama. (2020). *Advances in Space Research*, Volume 65, Issue 2. <https://doi.org/10.1016/j.asr.2019.03.029>

CONFERENCE PROCEEDINGS

- [1] *Georgia State University’s Professional Development Program for Summer Undergraduate Researchers.* E. Galligan, **M.K. Shea**, and D.M. Crenshaw. (2025). American Astronomical Society Meeting Abstracts #245, 168.04. [iPoster](#).
- [2] *The Shape of AGN-Driven Winds in the Seyfert Galaxy NGC 3516.* J. Tutterow, Nicolas Ferree, D.M. Crenshaw [...] **M.K. Shea**, et al. (2025). American Astronomical Society Meeting Abstracts #245, 252.01. [iPoster](#).
- [3] *Resolving the AGN-Driven Gas Evacuation in the Seyfert 1 Galaxy NGC 3227.* J. Falcone, D.M. Crenshaw, M. Revalski [...], **M.K. Shea**, et al. (2025). American Astronomical Society Meeting Abstracts #245, 123.01.
- [4] *Searching for Extended Ionized Outflows in the Quasar IRAS F11119+3257.* K. Patel, D.M. Crenshaw, M. Revalski [...] **M.K. Shea**, et al. (2025). American Astronomical Society Meeting Abstracts #245, 106.07. [iPoster](#).

- [5] *Disentangling the Kinematics of NGC 4258*. M. Davis, D.M. Crenshaw, **M.K. Shea**, et al. (2024). American Astronomical Society Meeting Abstracts #243, 203.13. [iPoster](#).
- [6] *Probing AGN Feeding & Feedback in a Compact Galaxy Group: The Case of Stephan's Quintet and NGC 7319*. **M.K. Shea**, D.M. Crenshaw, J. Falcone, et al. (2024). American Astronomical Society Meeting Abstracts #243, 203.10. [iPoster](#).
- [7] *Gas Outflow Kinematics in NGC 3516*. N. Ferree, D.M. Crenshaw, J. Falcone [...], **M.K. Shea**, et al. (2023). American Astronomical Society Meeting Abstracts #241, 360.41. [iPoster](#).
- [8] *Disentangling Outflows and Rotation in the Star-Forming Seyfert 1 Galaxy NGC 3227*. J. Falcone, D.M. Crenshaw, T.C. Fischer [...], **M.K. Shea**, et al. (2023). American Astronomical Society Meeting Abstracts #241, 301.29. [iPoster](#).
- [9] *Narrow-Line Region Outflows in a Sample of Nearby Seyfert Galaxies*. G. Polack, D.M. Crenshaw, M. Revalski [...], **M.K. Shea**, et al. (2023). American Astronomical Society Meeting Abstracts #241, 301.17. [iPoster](#).
- [10] *Ionized Gas Flows in the Compact Galaxy Group Stephan's Quintet and its Active Galaxy NGC 7319*. **M.K. Shea**, D.M. Crenshaw, J. Falcone, et al. (2023). American Astronomical Society Meeting Abstracts #241, 301.16. [iPoster](#).
- [11] *NGC 4395: The Little AGN That Could*. Z. Chapman, D.M. Crenshaw, J. Falcone, **M.K. Shea**, et al. (2023). American Astronomical Society Meeting Abstracts #241, 301.15. [iPoster](#).
- [12] *An Analysis of AGN-Driven Outflows in the Seyfert 1 Galaxy NGC 3227*. J. Falcone, D.M. Crenshaw, T.C. Fischer [...], **M.K. Shea**, et al. (2022). American Astronomical Society Meeting Abstracts #240, 101.04. [iPoster](#).
- [13] *Improving LIGO's Sensitivity Through an Actively Controlled Seismic Isolation System*. **M.K. Shea** and C. Mow-Lowry. (2020). American Astronomical Society Meeting Abstracts #235, 175.11.
- [14] *Black Hole Imaging with Space-Based Telescopes*. **M. K. Shea**, V. Fish, and K. Akiyama. (2019). American Astronomical Society Meeting Abstracts #233, 369.08.
- [15] *Black Hole Imaging with Space-Based Telescopes*. **M. K. Shea**, V. Fish, and K. Akiyama. (2018). Proceedings of the Keck Northeast Astronomy Consortium Undergraduate Symposium on Research in Astronomy #29, page 122.
- [16] *Studying Isocurvature Fluctuations through Galaxy Surveys*. **M. K. Shea** and D. Grin. (2017). Proceedings of the Keck Northeast Astronomy Consortium Undergraduate Symposium on Research in Astronomy #28, pages 90-94.