Megan Christina Davis

Physics Department
University of Connecticut
Storrs, CT 06269
USA

Pronouns: she/her/hers
E-mail: megdavis0897@gmail.com
Webpage: megcdavis.github.io
ORCID iD: 0000-0001-9776-9227

Education and Research Experience

2020 – Present **University of Connecticut (UConn)**, Storrs, CT.
PhD in Physics, expected in 2024. MSc in Physics, conferred in 2022.

Thesis: Timing is Everything: Binary Black Holes and Hypervariable Quasars in Massive Time-Domain Surveys
Advisor: Dr. Jonathan Trump

2020 – Present **NSF Graduate Research Fellow**
University of Connecticut with Dr. J. Trump

- Simulates and analyzes millions of time-domain optical observations of binary supermassive black holes (SMBHs) as will be observed by the Vera Rubin Observatory (Rubin/LSST)
- Constructs analysis pipelines that include Machine Learning algorithms

2020 – 2022 **Isaac S. and Lois W. Blonder Graduate Research Fellow**
University of Connecticut with Dr. J. Trump

- Curated custom observation designs for the SDSS-V Black Hole Mapper (BHM) Reverberation Mapping (RM) working group
- Compiled the SDSS BHM-RM parent catalog of targets, guiding the future of all observing campaigns within SDSS with this information

2015 – 2019 **Michigan State University (MSU)**, East Lansing, MI.
Bachelors of Science in Astrophysics with a minor in Computational Mathematics, Science, and Engineering.

Thesis: Modeling the Radial Migration of Stars and Gas in the Milky Way
Advisors: Dr. Brian O'Shea (MSU/JINA-CEE) and Dr. Benoit Côté (MSU/Konkoly Observatory)

Five years of research, outreach, and teaching experience, including:

- A NASA internship (Jet Propulsion Laboratory, California, 2018)
- REU and IRES positions with the IceCube collaboration (Wisconsin, 2016 and Brussels, Belgium, 2017)
- Undergraduate (thesis work, 2018-2019) and Post-Baccalaureate (X-ray binaries, 2019-2020) Research Assistant positions
- Three years of Undergraduate Teaching Assistant positions, leading monthly outreach events, and participating in department-wide DEI committees and efforts

Teaching and Outreach Experience

2022 – Present **Co-Organizer of Astronomy on Tap- Storrs, CT**

- Organizes monthly public outreach events comprising of astronomy-themed talks and trivia at local restaurants and bars

2017 – Present **Undergraduate Academic and Research Mentor**

2020 – Present	Micah Banschick (UConn BSc '26) Matthew Tiongko (UConn BSc '26) Abena Adzenyah (UConn BEng '25) Kaylee Grace (UDel PhD '28, UConn BSc '22)
2017 – 2020	Caleb Rispler (MSU MD '26, MSU BSc '22) Trevor Fush (Princeton PhD '28, MSU BSc '22) Elizabeth Kowalczyk (UMD PhD '28, MSU BSc '22) Jessie Miller (Caltech PhD '27, MSU BSc '21)

2019 – 2020 **Outreach Coordinator at the MSU Campus Observatory**
With Dr. L. Chomiuk

- Developed educational activities and displays for the Public Outreach Program, ran social media accounts, and recruited and organized volunteers for monthly outreach events

2017 – 2019 **Learning Assistant**

- ISP 205 (two semesters): an introductory astronomy course for non-science majors
- AST 207: an introductory course for astronomy majors
- AST 208: an introduction to exoplanets and observational techniques

2015 – 2019 Abrams Planetarium and MSU Observatory Outreach Assistant

Publications

Bolded work denotes first-authored or significant contribution

[1] Almeida et al. "The eighteenth data release of the Sloan Digital Sky Surveys: targeting and first spectra from SDSS-V". In: *The Astrophysical Journal Supplement Series* 267.2 (2023), p. 44.

[2] Anderson et al. "The Black Hole Mapper in SDSS-V". In: *American Astronomical Society Meeting Abstracts*. Vol. 55. 2. 2023, pp. 301–03.

[3] Bachetti et al. "StingraySoftware/stingray: v1. 0-beta". In: *Zenodo* (2022).

[4] Bachetti et al. "StingraySoftware/stingray: Version 1.0". In: *Zenodo* (2020).

[5] **Bottom** et al. "Starshade formation flying I: optical sensing". In: *Journal of Astronomical Telescopes, Instruments, and Systems* 6.1 (2020), pp. 015003–015003.

[6] **Megan C Davis** and AL Stevens. "Spectral Variability of a Soft-intermediate State QPO from MAXI J1820+ 070". In: *Research Notes of the AAS* 4.6 (2020), p. 95.

[7] **Megan C Davis**, AL Stevens, and J Strader. "Rapid spectral variability in the black hole transient MAXI J1820+ 070". In: *American Astronomical Society Meeting Abstracts# 235*. Vol. 235. 2020, pp. 170–13.

[8] **Megan C Davis** et al. "Reliable Identification of Binary Supermassive Black Holes from Rubin Observatory Time-domain Monitoring". In: *The Astrophysical Journal* 965.1 (2024), p. 34.

[9] Flinois et al. "S5: Starshade technology to TRL5 Milestone 4 Final Report: Lateral formation sensing and control". In: *Jet Propulsion Laboratory Publications* (2018).

[10] **Fries** et al. "The SDSS-V black hole mapper reverberation mapping project: unusual broad-line variability in a luminous quasar". In: *The Astrophysical Journal* 948.1 (2023), p. 5.

[11] Kaylee Grace, **Megan C Davis**, and Jonathan Trump. "Electromagnetic Detectability of Binary Supermassive Black Holes with the Vera Rubin Observatory". In: *Bulletin of the American Physical Society* 67 (2022).

[12] Homayouni et al. "A Fundamental Test of Black Hole Masses: Ultraviolet Echo Mapping the Multi-Scale Broad Line Gas around Quasars". In: *HST Proposal* (2023), p. 17487.

[13] Sharp et al. "The Sloan Digital Sky Survey Reverberation Mapping Project: investigation of continuum lag dependence on broad-line contamination and quasar properties". In: *The Astrophysical Journal* 961.1 (2024), p. 93.

[14] Shen et al. "The Sloan Digital Sky Survey Reverberation Mapping Project: Key Results". In: *arXiv preprint arXiv:2305.01014* (2023).

[15] Zeltyn et al. "A Transient "Changing-look" Active Galactic Nucleus Resolved on Month Timescales from First-year Sloan Digital Sky Survey V Data". In: *The Astrophysical Journal Letters* 939.1 (2022), p. L16.

[16] Zeltyn et al. "Exploring Changing-look Active Galactic Nuclei with the Sloan Digital Sky Survey V: First Year Results". In: *The Astrophysical Journal* 966.1 (2024), p. 85.

Awards and Scholarships

2024	Summer Doctoral Dissertation Fellowship
2024, 2023	National Fellowships Incentive Program Award
2020 - 2021	The Isaac S. and Lois W. Blonder Graduate Research Fellowship (UConn)
2020 - 2025	NSF Graduate Research Fellowship
2019	1st Prize in the University Undergraduate Research and Arts Forum (UURAF) for presenting a poster titled "Modeling the Radial Migration of Stars and Gas in the Milky Way"
2019	Outstanding Teaching Assistant Award from the Department of Physics and Astronomy
2015 – 2019	The John F. and Edith L. Wilsterman Scholarship
2015 – 2019	Flint Kiwanis Educational Foundation Scholarship

Talks and Panels

October 2024	Invited talk - Harvard ITC Luncheon
October 2024	Invited talk - Northwestern/CIERA Observational Group Meeting
March 2024	Invited talk - Kansas University Astronomy Seminar
November 2023	Invited talk and panelist - Yale Gravitational Wave Symposium

Conferences and Workshops

July 2024	Catching supermassive black holes with Rubin-LSST: Towards novel insights and discoveries into AGN science, Turin, Italy
May 2024	Astrocodex Hack Day Conference, Yale
April 2024	Time-Domain Needles in Rubin's Haystacks Hack Workshop, Harvard CfA
July 2023	Establishing Multi-messenger astronomy Inclusive Training (EMIT) Summer School, Vanderbilt
November 2022	SDSS Science Festival, Toronto, ON, Canada
October 2022	Astro Hack Week, Heidelberg, Germany
October 2022	SDSS Software Coding Week, Apache Point Observatory, Sunspot, New Mexico
May 2022	New England Regional Quasar and AGN Meeting (NERQUAM), UConn
July 2021	SDSS 2021 Collaboration meeting , virtual- talk given
April 2021	UConn Physics Graduate Student Association annual poster session- Poster presented
January 2020	235th meeting of the American Astronomical Society (AAS) in Honolulu, Hawaii- poster presented
May 2019	JINA-CEE Frontiers and the First Frontiers Summer School at MSU
April 2019	University Undergraduate Research and Arts Forum (UURAF)- poster presented
January 2019	Conference for Undergraduate Women in Physics (CUWiP) at MSU

Committees

2023 - Present UConn Physics Space Committee

- Handles office assignments and room allocations for the department

May 2022 Co-Lead of the Local Organizing Committee for NERQUAM 2022

- Organized the 30th annual, one-day New England Regional Quasar and AGN Meeting (NERQUAM) held in Storrs, CT in May 2022.

2019 – 2020 MSU Astronomy Department Reporting Task Force

- Developed the infrastructure for reporting harassment/bullying/bad behavior within the Astronomy group for students, faculty, and staff

2019 – 2020 Co-Lead of the Stellar Mentorship Program at MSU

- Oversaw the development and implementation of a mentor/mentee program for undergraduates, graduates, and post-doctoral researchers within the Astronomy group

Additional Skills

Software and Hardware:

- Competent in Python, bash scripting, C++, SQL, and HTML
- Regularly uses version control software, like GitHub
- Proficient in using AstroImageJ, MaximDL, DS9, and XSPEC
- Regularly uses DSLR and CCD cameras for astrophotography and photometry

Personal Development:

- Proficient in French and familiar with German, Dutch, and Italian
- Trained in conflict resolution and emergency trauma response