Megan Christina Davis

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Education

2020 – Present University of Connecticut (UConn), Storrs, CT.
Ph.D. in Physics, expected in 2026.

Advisor: Dr. Jon Trump

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)

Work and Research Experience

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

- Simulates and analyzes time-domain optical observations of binary supermassive black holes (SMBHs) as will be observed via the Vera Rubin Observatory (LSST)

Undergraduate REUs and Internships

May – Aug. 2018 **National Aeronautics and Space Administration (NASA) Intern**
Jet Propulsion Laboratory in Pasadena, California with Dr. M. Bottom

- Built a fully-automated testbed model of a Starshade-Telescope System to test formation flying concepts to be used in direct exoplanet imaging

May – Aug. 2017 **IceCube International Research Experience for Students (IRES)**
Vrije Universiteit Brussel in Brussels, Belgium with Dr. K. Mulrey

- Worked on data reduction and analysis for the LOFAR Radio Telescope LORA scintillating detectors and made Monte Carlo simulations of cosmic ray showers

May – Aug. 2016 **IceCube Research Experience for Undergraduates (REU)**
University of Wisconsin in River Falls, Wisconsin with Dr. L. McCann

- Studied optical fibers and their properties for possible use in IceCube Gen2 light detectors

Michigan State University

2019 – 2020 **Post-Baccalaureate Research Assistant**
With Dr. A. Stevens and Dr. J. Strader

- Studied compact objects and their spectral variability in the X-ray wavelength via *NICER* data
- Developed new scripts and features for the Stingray Python package that is used for astrophysical spectral-timing analysis

2018 – 2019 **Undergraduate Research Assistant**
With Dr. B. W. O'Shea

- Used the NuPyCEE Galactic Chemical Evolution Python code to make simulations of the Milky Way
- Built new functionality to account for radial migration of gas and stars in the thin disk of the Milky Way

2017 – Present **Expert Observer at the Campus Observatory**

- Takes calibration frames and images of various sources, like exoplanet candidates, cataclysmic variable stars, or microlensing events
- Reduces raw data and submits it to the American Association of Variable Star Observers, KELT Collaboration, and Center for Backyard Astrophysics

Teaching and Outreach Experience

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

- Develops educational activities and displays for the Public Outreach Program, runs social media accounts, and recruits and organizes 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

2016 – 2017 **Resident Assistant in *Case Hall***

- Assisted fellow undergraduate students by providing resources and support to the building community

2015 – 2019 Abrams Planetarium and MSU Observatory Outreach Assistant

2017 – Present **Undergraduate Student Mentor**

2020 – Present Kaylee Grace (UConn '22)

2018 – 2020 Jessie Miller (MSU '21)
Evan Zobel (MSU '22)
Caleb Rispler (MSU '22)
Trevor Fush (MSU '22)
Elizabeth Kowalczyk (MSU '22)

Publications

Refereed

M. Bottom, S. Martin , E. Cady , **M. C. Davis**, et al., 2019. *Starshade formation flying I: optical sensing*, accepted in the **Journal for Astronomical Telecopes, Instruments, and Systems** on 3 February 2020.

Unrefereed/Contributions

M. C. Davis and A. L. Stevens, 2019. *Spectral Variability of a Soft-Intermediate State QPO from MAXI J1820+070*, accepted in the **Research Notes of the American Astronomical Society** on 24 June 2020.

T. Flinois, M. Bottom, S. Martin, D. Scharf, **M. Davis**, S. Shaklan, 2018. *S5: Starshade Technology to TRL5 Milestone 4 Final Report: Lateral Formation Sensing and Control*, published in the **Jet Propulsion Laboratory Publications** in 2018.

*Szegedi-Elek, E. et al., 2020 *Gaia 18dvy: A New FUor in the Cygnus OB3 Association*, accepted in the **Astrophysical Journal** in August 2020.

*Patterson et al., 2017. *OV Bootis: Forty Nights Of World-Wide Photometry* The Society for Astronomical Sciences 36th Annual Symposium on Telescope Science and AAVSO Spring 2017 Meeting, published by *Society for Astronomical Sciences* in Spring of 2017.

*contributed to data collection

Awards and Scholarships

2020 The Isaac S. and Lois W. Blonder Graduate Research Fellowship (UConn)

2020 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
2016 – 2017	"Most Compassionate Campus Resident Assistant"
2016	Alternate Student selected to be sent to the Amundsen-Scott South Pole Station in Antarctica due to excellent work done durng [my] IceCube REU
2015 – 2019	The John F. and Edith L. Wilsterman Scholarship Trust
2015 – 2019	Flint Kiwanis Educational Foundation Scholarship

Conferences Attended and Presentations

January 2020	235th meeting of the American Astronomical Society (AAS) in Honolulu, Hawaii- Poster presentation
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

2019 – 2020 MSU Astronomy Department Reporting Task Force

- Developing 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

- Overseeing 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 and familiar with C++, HTML, and bash scripting
- Regularly uses version control software, like Github, for academic and research work
- Proficient in using AstroImageJ, MaximDL, and XSPEC
- Regularly uses a DSLR and CCD cameras for astrophotography and photometry

Personal Development:

- Proficient in French with elementary German and Dutch language skills
- Trained in conflict resolution and emergency trauma response