Megan Masterson

PhD Candidate
MIT Department of Physics, Astrophysics Division

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Education

2020– **PhD in Physics**, Massachusetts Institute of Technology.
Supervisor: Professor Erin Kara

2019–2020 **MASt in Astrophysics**, Churchill College, University of Cambridge.
Thesis: *Extended Fe Kα Emission in Nearby AGN Revealed by Multi-Order Chandra HETG Data*
Supervisor: Professor Chris Reynolds

2015–2019 **BS in Astronomy, BS in Mathematics & Physics**, Case Western Reserve University.
Graduated summa cum laude

Awards & Scholarships

2023 **Graduate Student Poster Award**, HEAD Meeting of the AAS.

2020–2021 **Kavli Graduate Fellowship**, MIT Kavli Institute for Astrophysics and Space Research.

2019–2020 **Gates Cambridge Scholarship**, MASt in Astrophysics, University of Cambridge.

2019 **Chambliss Astronomy Achievement Student Award**, 233rd AAS Meeting.

2019 **Jason J. Nassau Prize**, to an outstanding senior student in astronomy, Department of Astronomy, Case Western Reserve University.

2019 **Patricia B. Kilpatrick Award**, to the four-year varsity athlete with the highest GPA, Case Western Reserve University.

2018 **Richard F. Sigal Award**, for demonstrating excellence in their studies and intending to pursue a career in physics, Department of Physics, Case Western Reserve University.

Publications & Astronomer's Telegrams

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First-Author Publications:

Masterson, M., Kara, E., Pasham, D., et al. 2023, *Unusual Hard X-ray Flares Caught in NICER Monitoring of the Binary SMBH Candidate AT2019cuk/Tick Tock/SDSS J1430*, ApJL, 945, L34. doi:10.3847/2041-8213/acbea9
– Highlighted as a NICER Science Nugget

Masterson, M., McDonald, M., et al. 2023, *Evidence for AGN-Regulated Cooling in Clusters at $z \sim 1.4$: A Multi-Wavelength View of SPT-CL J0607-4448*, ApJ, 944, 164. doi:10.3847/1538-4357/acae9e

Masterson, M. & Reynolds, C.S. 2022, *Probing the Extent of Fe Kα Emission in Nearby AGN Using Multi-Order Analysis of Chandra High Energy Transmission Grating Data*, ApJ, 936, 66. doi:10.3847/1538-4357/ac83ae

Masterson, M., Kara, E., et al. 2022, *Evolution of a Relativistic Outflow and the X-ray Corona in the Extreme Changing-Look AGN 1ES 1927+654*, ApJ, 934, 35. doi:10.3847/1538-4357/ac76c0

Co-Author Publications:

Panagiotou, C., De, K., **Masterson, M.** et al. 2023, *A Luminous Dust-Obscured Tidal Disruption Event Candidate in a Star Forming Galaxy at 42 Mpc*, accepted to ApJL, arXiv:2303.02710

Kara, E. et al. (including **Masterson, M.**) 2023, *UV/Optical disk reverberation lags despite a faint X-ray corona in the AGN Mrk 335*, accepted to ApJ, arXiv:2302.07342

Xu, Y., Pinto, C., Kara, E., **Masterson, M.**, et al. 2022, *Ejection-Accretion Connection in NLS1 AGN 1H 1934-063, MNRAS, 513, 1910*, doi:10.1093/mnras/stac1058

Chakraborty, J., Kara, E., **Masterson, M.**, et al. 2021, *Possible X-ray Quasi-Periodic Eruptions in a Tidal Disruption Event Candidate, ApJL, 921, L40*, doi:10.3847/2041-8213/ac313b

ATels:

Pasham, D., et al. (including **M. Masterson**) 2022, *AT2019cuk/SDSSJ1430/ZTF18aarippg: High-cadence NICER and NuSTAR X-ray observations of the potential supermassive black hole binary with imminent merger (the tick-tock source)*, ATel#15225

Accepted Observing Proposals as PI

2022 **NICER** (AO5), *1ES 1927+654: Constraining the Post-Outburst State of an Extreme Nuclear Transient.* Allocated 52 ks of NICER monitoring and 26 ks of Swift monitoring for 1 year.

2021 **XMM-Newton** (AO21), *1ES 1927+654: Constraining the Late Stages of an Extreme Nuclear Transient.* Allocated 70 ks simultaneous XMM-Newton/NuSTAR observation.

NICER ToO Observations, *Total of 19 ks over 4 observations*.

Swift ToO Observations, *Total of 37 ks over 12 observations*.

Presentations

Mar. 2023 **Poster**, *20th Meeting of the High Energy Astrophysics Division of the AAS*, Awarded Graduate Student Poster Award.

Feb. 2023 **Invited Talk**, *Astro Seminar*, Tufts University, Department of Physics & Astronomy.

Feb. 2023 **Invited Talk**, *CfA Seminar*, Center for Astrophysics | Harvard & Smithsonian.

Dec. 2022 **Invited Talk**, *Extreme Astrophysics Seminar*, University of Michigan, Department of Astronomy.

July 2022 **Contributed Talk**, *BLack holes Across Space and Time (BLAST) Workshop 2022*.

July 2022 **Contributed Talk**, *COSPAR 2022, 44th Scientific Assembly*.

June 2022 **Contributed Talk**, *XMM-Newton Workshop: Black Hole Accretion Under the X-ray Microscope*.

Mar. 2022 **Contributed Talk**, *19th Meeting of the High Energy Astrophysics Division of the AAS*.

Jan. 2022 **Contributed Talk**, *239th Meeting of the American Astronomical Society (Canceled due to COVID)*.

Jan. 2019 **Poster**, *233rd Meeting of the American Astronomical Society*, Awarded Chambliss Student Prize.

Research Supervision

2022-2023 **Kylee Carden**, MIT Undergraduate Research Student *(co-supervised with Erin Kara)*.

2021-2022 **Isabella Guilherme**, MIT MSRP Undergraduate Student *(co-supervised with Erin Kara)*.
Now graduate student at Caltech

Teaching

Jan. 2023 **TA for Astronomy Field Camp**, *senior undergraduate course at MIT*.
Assisted with observations for three weeks at Teide Observatory in Tenerife, Spain

Fall 2022 **TA for Observational Techniques in Optical Astronomy**, *senior undergraduate course at MIT*.
Supervised weekly observing at Wallace Astrophysical Observatory, assisted with data reduction and analysis, and gave a specialty lecture on X-ray astronomy and accretion physics.
Student Evaluation Score: 6.8/7

2021 **Teacher for MIT Educational Studies Program**.
Designed and taught two classes on black holes, designed for middle school and high school students

Advocacy & Outreach

2023–now **Graduate Student Writer**, Astrobites.

2023–now **Event Organizer**, Boston Astronomy on Tap.

2021–now **MIT Sidewalk Astrogazers Member**, MIT Kavli Institute.
Co-Lead of organization during 2023

2022–now **Grads Advising Grad Admissions Committee Member**, MIT Physics Graduate Student Council.

Jan. 2023 **Mentor**, MIT Physics Directed Reading Program.

2021–2023 **Mentor**, MIT Physics Graduate Application Assistance Program.

2021–2022 **Mentor**, MIT Graduate & Undergraduate Womxn in Physics.

2021–2022 **Advocacy Board Member**, MIT Physics Graduate Student Council.

2019–2020 **Logistics Officer**, Cambridge University Girls in STEM.

2017, 2019 **Public Outreach Volunteer**, Astrophysics Research Lab at the NC Museum of Natural Sciences.
Ran solar observing sessions, developed new cart programs, and supervised local high school student