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 Analysis of 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

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

2020 **National Science Foundation Graduate Research Fellowship**, *Honorable Mention*.

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

2019 **Chambliss Astronomy Achievement Student Award**, for poster presentation at 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.

2018 **Barry Goldwater Scholarship**, *Honorable Mention*.

2018 **Research Experience for Undergraduates**, Smithsonian Astrophysical Observatory.

2016 **Research Experience for Undergraduates**, Indiana University-Purdue University Indianapolis.

Publications

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First-Author Publications:

Masterson, M., Kara, E., Ricci, C., et al. (2022), Evolution of a Relativistic Outflow and the X-ray Corona in the Extreme Changing-Look AGN 1ES 1927+654, accepted for publication in ApJ, arXiv:2206.05140

Masterson, M. & Reynolds, C.S. (2022), Probing the Extent of Fe Kα Emission in Nearby Active Galactic Nuclei Using Multi-Order Analysis of Chandra High Energy Transmission Grating Data, accepted for publication in ApJ, arXiv:2207.10686

Co-Author Publications:

Xu, Y., Pinto, C., Kara, E., **Masterson, M.**, et al. 2022, Ejection-Accretion Connection in NLS1 AGN 1H 1934-063, accepted for publication in MNRAS, arXiv:2204.06075

Chakraborty, J., Kara, E., **Masterson, M.**, et al. 2021, Possible X-ray Quasi-Periodic Eruptions in a Tidal Disruption Event Candidate, ApJL, 921, L40, arXiv:2110.10786

Accepted Observing Proposals as PI

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

2021-2022 **NICER ToO Observations**, *Total of 9 ks over three observations*.

2021-2022 **Swift ToO Observations**, *Total of 24 ks over three observation*.

Presentations

July 2022 **Contributed Talk**, *BLack holes Across Space and Time (BLAST) Workshop 2022*.
Evolution of a Relativistic Outflow and X-ray Corona in the Extreme Changing-Look 1ES 1927+654

July 2022 **Contributed Talk**, *COSPAR 2022, 44th Scientific Assembly*.
Probing Extreme Accretion Physics with X-ray Nuclear Transients: a Case Study of 1ES 1927+654

June 2022 **Contributed Talk**, *XMM-Newton Workshop 2022: Black Hole Accretion Under the X-ray Microscope*.
Probing Extreme Accretion Physics with X-ray Nuclear Transients: a Case Study of 1ES 1927+654

Mar. 2022 **Contributed Talk**, 19th Meeting of the High Energy Astrophysics Division of the AAS.
Evolution of a Relativistic Outflow and X-ray Corona in the Extreme Changing-Look 1ES 1927+654

Jan. 2022 **Contributed Talk**, 239th Meeting of the American Astronomical Society.
X-ray Evolution of the Exciting Nuclear Transient in 1ES 1927+654 (Canceled due to COVID-19)

Jan. 2019 **Poster**, 233rd Meeting of the American Astronomical Society.
Using Chandra X-ray Observations to Determine the Physical Properties of G211.21+38.66, a Planck-Detected, Merging Galaxy Cluster at $z = 0.505$

Aug. 2018 **Talk**, Smithsonian Astrophysical Observatory Summer Intern Symposium.
Using Chandra X-ray Observations to Determine the Physical Properties of G211.21+38.66, a Planck-Detected, Merging Galaxy Cluster at $z = 0.505$

Student Supervision

Summer 2022 **Kylee Carden**, MIT Undergraduate Research Student *(co-supervised with Erin Kara)*.
Probing the Highly Ionized Wind in the Changing-Look AGN NGC 1365

2021-2022 **Isabella Guilherme**, MIT MSRP Undergraduate Student *(co-supervised with Erin Kara)*.
The Late X-ray Emission from the Tidal Disruption Event AT2019azh

Service

2022–2023 **Grads Advising Grad Admissions Member**, Physics Graduate Student Council, MIT Physics.

Jan. 2022 **Judge for the Chambliss Astronomy Achievement Student Award**, 239th AAS Meeting, *Canceled due to COVID-19*.

2021–2022 **Mentor**, MIT Physics Graduate Application Assistance Program.

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

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

Outreach

July 2021 **HSSP @ MIT**, Co-taught and designed summer course on black holes, consisting of three 1 hour long classes, targeted for 10th-12th graders.

Mar. 2021 **Spark @ MIT**, Taught class on active galaxies and supermassive black holes to middle school students.

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

2019–2020 **Volunteer**, Institute of Astronomy Open Evenings, University of Cambridge.

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