

Emily M. Silich

Department of Astronomy, California Institute of Technology

email: esilich@astro.caltech.edu

Education

California Institute of Technology (Caltech)

Astrophysics, PhD (expected 2026) Astrophysics, MS (2023)

NSF Graduate Research Fellow

2023 - 2026

Wallace L. W. Sargent Graduate Fellow

2021 - 2022

University of Iowa

2017 - 2021

Astronomy, BS Physics, BS Mathematics, minor

with University Honors, High Distinction, Honors in Astronomy, Phi Beta Kappa

Research

Predoctoral Fellow

2024 -

Center for Astrophysics | Harvard & Smithsonian

Graduate Research Assistant

2021 -

Division of Physics, Mathematics and Astronomy, Caltech

Undergraduate Research Assistant

2017 - 2021

Department of Physics & Astronomy, University of Iowa

Research Intern

Summer 2020

X-ray Astrophysics Laboratory, NASA Goddard Space Flight Center

Student Researcher

Winter 2019

Canada-Norway Student Sounding Rocket Program (CaNoRock)

Publications (selected)

1. **E.M. Silich**, E. Bellomi, J. Sayers, J. ZuHone, U. Chadayammuri, S. Golwala, D. Hughes, A. Montaña, T. Mroczkowski, D. Nagai, D. Sánchez, S.A. Stanford, G. Wilson, M. Zemcov, and A. Zitrin, “*ICM-SHOX. Paper II: Galaxy cluster sample overview*”, 2023, to appear in Proc. of the mm Universe 2023 conference, EPJ Web of conferences, EDP Sciences.
2. **E.M. Silich**, E. Bellomi, J. Sayers, J. ZuHone, U. Chadayammuri, S. Golwala, D. Hughes, A. Montaña, T. Mroczkowski, D. Nagai, D. Sánchez, S.A. Stanford, G. Wilson, M. Zemcov, and A. Zitrin, “*ICM-SHOX. Paper I: Methodology overview and discovery of a baryon–dark matter velocity decoupling in the MACS J0018.5+1626 merger*”, 2023, submitted to The Astrophysical Journal.
3. **E.M. Silich**, K. Jahoda, L. Angelini, P. Kaaret, A. Zajczyk, D.M. LaRocca, R. Ringuette, and J. Richardson, “*A Search for the 3.5 keV Line from the Milky Way’s Dark Matter Halo with HaloSat*”, 2021, The Astrophysical Journal, 916, 2.
4. A. Zajczyk, P. Kaaret, D. LaRocca, W. Fuelberth, H.C. Gulick, K. Jahoda, D.L. Kirchner, R. McCurdy, W.T. Robison, and **E. Silich**, “*On-ground calibration of the HaloSat science instrument*”, J. Astron. Telesc. Instrum. Syst. 6(4), 044005 (2020).
5. **E.M. Silich**, P. Kaaret, A. Zajczyk, D.M. LaRocca, J. Bluem, R. Ringuette, K. Jahoda, and K.D. Kuntz, “*Global X-Ray Properties of the Vela and Puppis A Supernova Remnants*”, 2020, The Astronomical Journal, 160, 1.
6. P. Kaaret, A. Zajczyk, D.M. LaRocca, R. Ringuette, J. Bluem, W. Fuelberth, H. Gulick, K. Jahoda, T.E. Johnson, D.L. Kirchner, D. Koutroumpa, K.D. Kuntz, R. McCurdy, D.M. Miles, W.T. Robison, and **E.M.**

Silich, “*HaloSat - A CubeSat to Study the Hot Galactic Halo*”, 2019, The Astrophysical Journal, 884, 2.

Teaching

Ay 105: Optical Astronomy Instrumentation Lab	Graduate TA // Spring 2023
Ay 122c: High Energy Astronomical Measurements & Instrumentation	Graduate TA // Winter 2023
Ay 127: Astrophysical Cosmology	Graduate TA // Fall 2022
PHYS 1611: Introductory Physics I	Undergraduate TA // Spring 2020
PHYS 1512: College Physics II	Undergraduate TA // Spring 2020

Fellowships & Awards (selected)

Garmire Scholar, France A Cordova Graduate Student Fund (Caltech)	2023
NSF Graduate Research Fellowship (GRFP)	2023 - 2026
Wallace L. W. Sargent Graduate Fellowship (Caltech)	2021 - 2022
Chambliss Astronomy Achievement Student Awards - Honorable Mention	2021
University of Iowa Dare to Discover	2021
Barry Goldwater Scholar	2020
James A. Van Allen Award (Ulowa)	2020
John Mather Nobel Scholar (NASA/GSFC)	2020
Western Dubuque High School Young Accomplished Alumni	2020
APS Division of Astrophysics (DAP) Travel Grant	2020
Manuel Paul & Abraham Chinitz Liberal Arts & Sciences Scholarship (Ulowa)	2019 - 2020, 2020 - 2021
NASA Iowa Space Grant Consortium Research Fellowship	2018 - 2019, 2019 - 2020
Myrtle K. Maier Scholarship (Ulowa)	2019 - 2020
Rhodes Dunlap Award for Excellence in the First/Second Year (Ulowa)	2018 - 2019, 2019 - 2020
ICRU Academic Year Research Fellowship	2018 - 2019, 2019 - 2020
Charles A. Wert Summer Research Fund (Ulowa)	2019
UI Department of Physics & Astronomy Poster Prize	2018, 2019
ICRU Summer Research Fellowship	2018
UI Old Gold Scholarship	2017 - 2021
UI Top Scholars Award	2017 - 2021
UI Academic Success Scholarship	2017 - 2021
CLAS Undergraduate Scholarship (Ulowa)	2018 - 2019
Stanley Merit-Based Study Abroad Scholarship (Ulowa)	2019
Ann Morse Study Abroad Grant (Ulowa)	2019
Iowa Abroad Scholarship	2019
President's List, University of Iowa	2020 - 2021
Dean's List, University of Iowa	2017 - 2021

Academic Presentations (selected)

Talks:

1. *Galaxy Cluster Discussion Group Meeting*, Center for Astrophysics | Harvard & Smithsonian. Cambridge, MA. February 2024.
2. *High Energy Astrophysics Seminar*, Center for Astrophysics | Harvard & Smithsonian. Cambridge, MA. February 2024.
3. *Merging Cluster Workshop*, Yonsei University. Seoul, KR. December 2023.
4. *Observational Cosmology Seminar*, Caltech. Pasadena, CA. October 2023.
5. *Observing the Universe at Millimetre Wavelengths*, Laboratory of Subatomic Physics & Cosmology (LPSC). Grenoble, FR. June 2023.

6. *Observational Cosmology Seminar*, Caltech. Pasadena, CA. February 2023.
7. *Galaxy Cluster Discussion Group Meeting*, Center for Astrophysics | Harvard & Smithsonian. Virtual. November 2022.
8. *240th American Astronomical Society (AAS) Meeting*, Pasadena, CA. June 2022.
9. *Department of Physics & Astronomy Awards Colloquium*, University of Iowa. Virtual. April 2021.
10. *Department of Physics & Astronomy Colloquium*, University of Iowa. Virtual. October 2020.
11. *Gulf Coast Undergraduate Research Symposium*, Virtual. October 2020.
12. *NASA/GSFC Code 660 Intern Presentation Symposium*, Virtual. August 2020.
13. *Iowa Space Grant Consortium Student Research Symposium*, Virtual. April 2020.
14. *Conference for Undergraduate Women in Physical Sciences*, University of Nebraska. Lincoln, NE. November 2019.
15. *Astrophysics & Space Physics Seminar*, University of Iowa. Iowa City, IA. October 2019.

Posters:

1. *STScI Galaxy Clusters 2022: Challenging Our Cosmological Perspectives*, Virtual. April 2022.
2. *237th American Astronomical Society (AAS) Meeting*, Virtual. January 2021.
3. *American Physical Society (APS) April Meeting*, Virtual. April 2020.
4. *Iowa Space Grant Consortium Student Research Symposium*, Virtual. April 2020.
5. *APS Conference for Undergraduate Women in Physics*, University of Minnesota. Minneapolis, MN. January 2020.
6. *ICRU Fall Undergraduate Research Festival*, Iowa City, IA. November 2019.
7. *ICRU Fall Undergraduate Research Festival*, Iowa City, IA. November 2018.
8. *Conference for Undergraduate Women in Physical Sciences*, University of Nebraska. Lincoln, NE. October 2018.

Computer Skills

Languages	Python, R, HTML
Applications	Xspec/PyXspec, L ^A T _E X, CIAO/Sherpa, IRAF/dsimulator, SLURM, Keck Remote Observing Software (DEIMOS, LRIS), yt, SpecPro, Pypelt, CASA, ds9
Operating Systems	macOS, Linux, Windows

Outreach

Lectures & speaking engagements:

1. Caltech stargazing lectures, “*Galaxy Clusters Collide: The Most Energetic Events since the Big Bang*”, Pasadena, CA. August 2023. Watch here: https://www.youtube.com/watch?v=X2.5uiAL_vE
2. Death Valley NP Dark Sky Festival, “*Ask an Astrophysicist*” Q&A panelist, DVNP, CA. March 2023.

Volunteering:

1. Astronomy on Tap – Los Angeles	Volunteer & telescope operator	//	2022 -
2. Caltech stargazing lectures & public observing	Telescope operator	//	2022 -
3. Gabrielino High School physics classrooms	Guest lab assistant & speaker	//	2021 -
4. Girl Scouts Troop 6371 (Monrovia, CA)	Guest speaker	//	2023
5. Death Valley NP Dark Sky Festival	Science booth & telescope operator	//	2022, 2023
6. Astrobites	Guest author	//	2021
7. Iowa Center for Research by Undergraduates	Research ambassador	//	2020 - 2021

8. Society of Physics Students
9. Van Allen Observatory public observing
10. Drexler Middle School FIRST Lego League

Vice president & secretary	//	2017 - 2021
Volunteer & telescope operator	//	2017 - 2021
Team mentor	//	2018