

KALEY BRAUER

Harvard University, Harvard-Smithsonian Center for Astrophysics
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EDUCATION

Ph.D. in Physics	2023
Massachusetts Institute of Technology Astrophysics Division; GPA: 5.0/5.0	
B.Sc. in Physics	2017
Brown University University honors, departmental honors, GPA: 4.0/4.0	

ACADEMIC POSITIONS

NSF Prize Postdoctoral Fellow	2023 - present
Harvard-Smithsonian Center for Astrophysics	
US Department of Energy Graduate Fellow; Graduate Researcher	2017 - 2023
Massachusetts Institute of Technology	
Visiting Research Fellow	Fall 2021
Lawrence Berkeley National Laboratory	

HONORS & AWARDS

NSF Astronomy & Astrophysics Postdoctoral Fellowship (\$330,000)	2023 - present
Department of Energy Computational Science Graduate Fellowship (\sim \$450,000)	2018 - 2022
NSF Graduate Research Fellowship (\sim \$150,000), <i>offer declined</i>	2018
Whiteman Fellowship (\sim \$100,000), MIT	2017 - 2018
R. Bruce Lindsay Award, Brown University, <i>given to senior for excellence in physics</i>	2017
Eva A. Mooar Prize, Brown University, <i>given to woman for academic excellence</i>	2017
Sigma Xi Research Honor Society	2017
Karen T. Romer Undergraduate Teaching and Research Award, Brown University	2015

PUBLICATIONS

REFERREED

- Ji, A. P., Naidu, R., **Brauer, K.**, Ting, Y., & Simon, J. (2022). Chemical Abundances of the Typhon Stellar Stream. *Monthly Notices of the Royal Astronomical Society*, 519, 4467-4478.
- Brauer, K.**, Andales, H., Ji, A. P., Mardini, M., Frebel, A., Gomez, F. A., & O'Shea, B. W. (2022). Possibilities and Limitations of Kinematically Identifying Stars from Accreted Ultra-Faint Dwarf Galaxies. *The Astrophysical Journal*, 937, 14.
- Mardini, M., Frebel, A., Chiti, A., Meiron, Y., **Brauer, K.**, Ou, X. (2022). Characterization of the Metal Weak Thick Disk of the Milky Way. *The Astrophysical Journal*, 936, 78.
- Brauer, K.**, Ji, A. P., Drout, M., Frebel, A. (2021). Collapsar R-Process Yields Can Reproduce [Eu/Fe] Abundance Scatter in Metal-Poor Stars. *The Astrophysical Journal*, 915, 81.

Gull, M., Frebel, A., Hinojosa, K., Roederer, I. U., Ji, A. P., **Brauer, K.** (2021). R-process-rich stellar streams in the Milky Way. *The Astrophysical Journal*, 912, 52.

Brauer, K., Ji, A. P., Frebel, A., Dooley, G. A., Gomez, F. A., & O’Shea, B. W. (2019). The Origin of r-process Enhanced Metal-Poor Halo Stars In Now-Destroyed Ultra-Faint Dwarf Galaxies. *The Astrophysical Journal*, 871, 247.

Brauer, K., Vrtillek, S. D., Peris, C., & McCollough, M. (2018). Phase-resolved spectroscopy of the low-mass X-ray binary V801 Ara. *Monthly Notices of the Royal Astronomical Society*, 478, 4894-4904.

NON-REFERREED

Brauer, K. (2021). “I’ll Finish it This Week” And Other Lies. *arXiv April Fools Paper*. arXiv:2103.16574

Brauer, K., Ji, A., Hattori, K., Escobar, S., & Frebel, A. (2019). Kinematics of highly r-process-enhanced halo stars: Evidence for origins in now-destroyed ultra-faint dwarf galaxies. *Proceedings of the International Astronomical Union*, 14(S353), 71-74.

PRESENTATIONS

INVITED

Talk at US Department of Energy CSGF Program Review Washington, DC, USA; July 2022
“Studying the Tiniest, Oldest Galaxies That Merged Into the Milky Way Throughout its Formation History”

High Performance Computing Talks at IHPCSS Athens, Greece; June 2022
Invited Mentor at the International High Performance Computing Summer School

Colloquium Talk at University of Melbourne Melbourne, Australia (remote); Oct 2021
“Studying the Tiniest, Oldest Galaxies in the Milky Way’s Assembly History through Chemical Tagging and Kinematics”

Seminar Talk at Computational Research in Boston and Beyond Boston, USA (remote); Oct 2021
“Investigating Galactic Evolution through Ancient Stars & Galaxies”

Seminar Talk at Carnegie Observatories Pasadena, CA, USA (remote); Oct 2020
“Collapsars as a Source of R-Process in Metal-Poor Stars”

CONTRIBUTED

Talk at IAU Symposium 377 on Early Disk Galaxy Formation Kuala Lumpur, Malaysia; Feb 2023
“The Smallest, Earliest Galaxies and their Contributions to the Milky Way”

Talk at 241st Meeting of the American Astronomical Society Seattle, WA, USA; Jan 2023
“The Smallest Galaxies in the Milky Way’s Assembly History and the Origin of Heavy Elements”

Talk at JINA-CEE Frontiers in Nuclear Astrophysics Meeting South Bend, IN, USA; May 2022
“Simulating the Astrophysical Origins of Metal-Poor R-Process Stars”

Talk at 2021 GALAH Science Meeting Sydney, Australia (remote); June 2021
“Modeling Galactic Chemical Evolution in Dwarf Galaxies with Individual Stars”

Talk at *Linking the Galactic and Extragalactic* Wollongong, Australia (remote); Dec 2020
“Exploring the Low-Mass End of the Assembly History of Milky Way-Mass Galaxies”

Talk at 235th Meeting of the American Astronomical Society Honolulu, HI, USA; Jan 2020
“Chemical Tagging of Halo Stars From Ultra-Faint Dwarf Galaxies”

Talk at IAU Symposium 353 on Galactic Dynamics “Kinematics of Highly r-Process-Enhanced Halo Stars”	Shanghai, China; July 2019
Poster at JINA-CEE Frontiers in Nuclear Astrophysics Meeting “Origin of r-Process-Enhanced Stars in Ultra-faint Dwarf Galaxies”	East Lansing, MI, USA; May 2019
Talk at JINA-CEE Frontiers in Nuclear Astrophysics Meeting “Metallicity and Mass Distributions of Accreted Dwarf Satellites in Milky Way-Mass Halos”	South Bend, IN, USA; May 2018
Poster at 229th Meeting of the American Astronomical Society “The Structures of X-ray Binary Systems V801 Ara and Cyg X-3 from Doppler Tomography”	Grapevine, TX, USA; Jan 2017
Poster at 47th Meeting of the Division of Planetary Science “The Shape of Near-Earth Asteroid 275677 (2000 RS11) From Inversion of Arecibo and Goldstone Radar Images”	Washington, DC, USA; Nov 2015

SKILLS

Programming	Python, C/C++, Julia, Java, HTML/CSS, SQL
High Performance Computing	OpenMP, MPI, OpenACC, experience with the National Energy Research Scientific Computing Center (NERSC)
Graphic Design	Adobe Creative Cloud, illustration and layout design

STUDENTS ADVISED

Hillary Diane Andales (MIT undergraduate)	Summer 2020 - Spring 2023
Joseph Merkel (MIT undergraduate)	Summer 2020

TEACHING

8.03 Vibrations and Waves Teaching Assistant <i>Physics Department, Massachusetts Institute of Technology</i>	Spring 2023
8.S30 Stellar Archaeology Teaching Assistant <i>Physics Department, Massachusetts Institute of Technology</i>	Fall 2022
PHYS0220/0270 Astronomy Teaching Assistant <i>Physics Department, Brown University</i>	Fall 2014 - Spring 2015
PHYS0030 Introductory Physics Workshop Assistant <i>Physics Department, Brown University</i>	Fall 2014

LEADERSHIP & SERVICE

Graduate Women in Physics Leader <i>Massachusetts Institute of Technology</i>	2019 - present
High Performance Computing Mentor *only graduate student to ever serve as a mentor <i>International High Performance Computing Summer School, Athens, Greece</i>	June 2022
Reviewer for JOSS <i>Journal of Open Source Software</i>	2022 - present
President, MIT Salsa Club <i>Massachusetts Institute of Technology</i>	2018 - 2022

Physics Representative, Diversity and Inclusion Committee <i>MIT Graduate Student Council</i>	2018 - 2022
Cosmology Volunteer Course Designer and Instructor <i>Spark, MIT Educational Studies Program</i>	Spring 2021
Treasurer, Students for the Exploration and Development of Space <i>Massachusetts Institute of Technology</i>	2017 - 2021
Adopt-a-Physicist Volunteer <i>Sigma Pi Sigma</i>	2018 - 2020
<i>Catalyst</i> Volunteer Computer Science Instructor <i>Citizen Schools and Mass STEM Hub</i>	Spring 2019
Designer & Observer, MIT Sidewalk Astrogazers <i>MIT Kavli Institute for Astrophysics and Space Research</i>	2017 - 2019
Head of Design Team, The Triple Helix Magazine <i>Brown University</i>	2014 - 2017
Women in Physics Co-coordinator <i>Brown University</i>	2016 - 2017
Physics Show Presenter <i>Physics & Astronomy Department, Texas A&M University</i>	Summer 2014