Elisabeth A.C. Mills | Associate Professor

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Education

University of California, Los Angeles — **Los Angeles, CA**
Ph.D., Astronomy — *2007–2013*
Thesis: Extremes of Temperature and Density in Galactic Center Molecular Clouds
Advisor: Mark R. Morris

Indiana University — **Bloomington, IN**
Bachelors of Science, Physics & Astronomy — *2002–2007*

Research Summary

I use the cutting-edge capabilities of international infrared, radio and millimeter facilities to study the central regions of the Milky Way and other nearby galaxies. During my time at KU I have brought in $1.4 million worth of grants funding, including a prestigious NSF-CAREER award. I have also been awarded 1656.5 hours of observing time (1326.6 of which are as PI or co-PI) on the top facilities in my field, for which proposal success rates are 14-25%. I am co-PI of an ALMA Large observing program, a major community undertaking with more than 100 international collaborators. I am one of 25 co-investigators for PRIMA, a concept for a far-infrared space telescope that is currently one of two contenders for a $1 billion class mission to be launched by NASA in the 2030s. In the last four years, I have given 8 invited talks, 4 of which are major reviews, keynotes, or plenary talks.

Appointments

University of Kansas — **Lawrence, KS**
Associate Professor — *2025 - Present*

University of Kansas — **Lawrence, KS**
Assistant Professor — *2020 - 2025*

Brandeis University — **Waltham, MA**
Research Assistant Professor — *2018–2020*

Boston University — **Boston, MA**
Research Assistant Professor — *2017–2018*

San Jose State University — **San Jose, CA**
Assistant Professor — *2016–2017*

Steward Observatory — **Tucson, AZ**
Postdoctoral Researcher, Jansky Fellow — *2015–2016*

National Radio Astronomy Observatory — **Socorro, NM**
Postdoctoral Researcher, Jansky Fellow — *2013–2015*

University of California, Los Angeles — **Los Angeles, CA**
Graduate Researcher, NSF GK-12 Fellow — *2007–2013*

Visiting Positions

Max Planck Institute for Astronomy — **Heidelberg, Germany**
Visiting Scientist, Summer Visitor Program — *Summer 2016*

European Southern Observatory — **Garching, Germany**
Visiting Scientist, Scientific Visitor Programme — *May 2015*

Max Planck Institute for Astronomy — **Heidelberg, Germany**
Visiting Researcher, Planet & Star Formation department — *2012-2013*

National Radio Astronomy Observatory — **Socorro, NM**
Visiting Researcher, NRAO Resident Shared-Risk Observing Program — *Summer 2012*

Grants and Awards

2025: PRIMA Phase A ($35,872)
2024: JWST - General Observer Program ($57,111)
2024: NSF CAREER ($821,724)
2022: NSF AAG ($315,732)
2022: NRAO Student Observing Support ($31,354)
2022: SOFIA - General Observer Program ($51,700
2021: JWST - General Observer Program ($21,183)
2019: NRAO Student Observing Support ($34,410)
2018: NSF AAG ($175,654)
2017: SJSU Research, Scholarship, and Creative Activity Award ($5000)
2015: ALMA Development Grant Co-I ($185,000)
2013: Jansky Postdoctoral Fellowship ($225,000)
2013: AAS Roger Doxsey Travel Prize
2013: NSF Astronomy and Astrophysics Postdoctoral Fellowship, declined ($267,000)
2013: NRAO Student Observing Support Program ($10,000)
2010: NSF GK-12 Fellowship ($30,000 + fees)
2010: NRAO Student Observing Support Program ($35,000)
2008: Honorable mention, NSF Graduate Research Fellowship
2008: UCLA Chancellor's Prize Graduate Summer Research Mentorship Award ($5000)
2007: Honorable mention, NSF Graduate Research Fellowship
2007: UCLA Chancellor's Prize ($5000)

Space Mission and Ground-Based Facilities Development

2022-Present: PRIMA mission concept proposed to NASA Astrophysics Probe Explorer 2023 **(Co-I)**
2022-Present: Science Advisory Council for the Next Generation Very Large Array **(Member)**

Accepted Observing Proposals

Date	Facility	Time	Project
2026	JWST	144.2 hrs	The JWST/NIRCam Legacy Survey of the Galactic Center
2026	JWST	39.0 hrs	The Nearest Seyfert Starburst Nucleus and its Galactic Outflow
2025	ALMA	36.4 hrs	The Birth of Super Star Clusters
2024	JWST	17.7 hrs	Identifying, counting, and mapping YSOs in Sgr B2
2023	ALMA	44.5 hrs	Magnetic fields in massive dense cores in the Central Molecular Zone
2023	ALMA	24.1 hrs	A census of prestellar and protostellar cores in the CMZ
2022	ALMA	4.1 hrs	The evolution of super star clusters in the nuclear starburst of NGC 4945
2022	ALMA	8.3 hrs	Resolving Embedded Young Massive Clusters in a Nearby Ringed Galaxy
2022	VLA	108.5 hrs	JACKS: JVLA Ammonia CMZ K-band Survey **(PI)**
2021	VLA	18.3 hrs	High-frequency radio continuum mapping of M82 **(PI)**
2021	ALMA-Large	1194.6 hrs	ACES: ALMA CMZ Exploration Survey **(co-PI)**
2021	ALMA	15.6 hrs	Star Formation in the Brick & Cloud C:Combining JWST and ALMA
2021	ALMA	126.9 hrs	Complete Molecular Gas Coverage in Nearby Low-Luminosity AGN
2021	ALMA	74.2 hrs	The Molecular Wind of NGC4945
2021	ALMA	14.2 hrs	Do magnetic fields diversify gas fragmentation at sub-0.1 pc scales
2021	ALMA	34.7 hrs	A census of protostellar distributions in the CMZ
2021	ALMA	9.1 hrs	A Top-down View of Massive Cluster Formation in a Nearby Nucleus
2021	JWST	9.9 hrs	Star Formation along the Galactic Dust Ridge: The Brick and Cloud C
2021	JWST	42.8 hrs	Mid-IR observations of winds in NGC 253 and M82
2020	SOFIA	5.2 hrs	Mapping Molecular H2 in the Circumnuclear disk **(PI)**
2019	VLA	38.2 hrs	Galactic Center CH absorption survey **(PI)**
2019	VLA	185.4 hrs	THOR Galactic center survey
2019	ALMA	6.1 hrs	Galactic Center CO absorption survey **(PI)**
2019	ALMA	26.6 hrs	High-resolution observations of Circinus torus **(PI)**
2019	IRTF	36 hrs	Isotope measurements in M-dwarfs
2018	SOFIA	30.3 hrs	Legacy Program for Galactic center star formation
2017	JWST	15.7 hrs	DD-ERS to measure dusty Wolf Rayet stars
2017	ALMA	30 hrs	3 mm survey of the core of NGC 253 at 2 pc resolution **(PI)**
2017	ALMA	33 hrs	Band 7 survey of gas conditions in Galactic center clouds **(PI)**
2015	VLA	2 hrs	DDT search for new Galactic center OH masers **(PI)**
2015	ALMA	4.7 hrs	Dating the accretion flow around our supermassive black hole
2015	ALMA	28.6 hrs	Surveying the core of the NGC 253 Starburst at 1 pc resolution
2015	ALMA	2.1 hrs	Proper motion of gas around our supermassive black hole
2014	ALMA	16.4 hrs	Excitation study of the Galactic center Circumnuclear Disk **(PI)**
2014	ALMA	5.9 hrs	Study of atomic gas accretion onto our supermassive black hole
2014	ALMA	7.6 hrs	Search for neutral gas within 0.1 pc of our supermassive black hole
2014	ALMA	2.9 hrs	Studying Galactic center absorption filaments
2014	ALMA	22 hrs	Probing the star formation potential in Sgr B2
2014	GBT	74.5 hrs	Survey of Highly-Excited Ammonia in Nearby Galaxies **(PI)**
2014	ATCA	3 weeks	Large molecular lines survey of the GC **(Co-PI)**
2013	VLA	9 hrs	Constraints on dense gas in Galactic center clouds **(PI)**
2012	VLA	1.5 hrs	DDT search for star formation in a GC cloud **(PI)**
2011	VLA	24 hrs	Survey of molecular lines in Galactic center clouds **(PI)**
2010	GBT	9 hrs	Survey of hot ammonia in the Galactic center **(PI)**

Talks

Keynotes and Invited Reviews

05/2023: Keynote speaker, NRAO Postdoc Symposium

10/2022: Keynote speaker, 50th Mid-America Regional Astronomy Conference

06/2020: Invited Plenary, 236th AAS Meeting

10/2018: Invited Review, 8th International Fermi Symposium

06/2018: Invited Review, AAS SOFIA Meeting in a Meeting "Astrophysics in the SOFIA Era"

08/2017: Invited Review, "SFDE17: From Local Clouds to Distant Galaxies", Quy Nhon, Viet Nam

07/2016: Invited Review, "IAU 322: The Multi-Messenger Astrophysics of the Galactic Centre", Australia

03/2016: Invited Review, "Carnegie Radio Showcase", Pasadena, CA

10/2015: Invited Review, "Bashfest", University of Texas at Austin

03/2015: Invited Review, "The Soul of High Mass Star Formation" Puerto Varas, Chile

Colloquia and Invited Talks

03/2026: University of Kentucky Astronomy Seminar

03/2026: University of Kansas Self Fellowship Lunch Seminars

11/2025: Benedictine College Physics and Astronomy Colloquium

11/2023: Missouri State University Physics Colloquium

05/2021: CMZoom Virtual Community Talk Series

12/2020: Bard College Physics Colloquium

09/2020: University of Michigan Astronomy Colloquium

02/2019: Rutgers Astronomy Colloquium

02/2019: University of Kansas Physics and Astronomy Colloquium

12/2018: Bowdoin College Physics Colloquium

12/2018: Ithaca College Physics Colloquium

11/2018: University of Wisconsin-Madison Astronomy Colloquium

03/2018: University of Connecticut Physics Colloquium

02/2018: Boston University Astrophysics and Space Physics Colloquium

02/2018: UMass-Amherst Astronomy Colloquium

02/2018: MIT Astrophysics Colloquium

10/2017: Far Infrared-Science Interest Group Monthly Seminar (Tele-talk)

05/2017: Santa Clara College Physics Colloquium

05/2017: California State University-Northridge Physics Colloquium

04/2017: JPL Astrophysics Luncheon Seminar

04/2017: California State University-East Bay Physics Colloquium

02/2017: SOFIA Colloquium, NASA-Ames

10/2016: San Francisco State Physics and Astronomy Colloquium

07/2016: Königstuhl Colloquium, Max Planck Institute for Astronomy, Heidelberg, Germany

04/2016: New Mexico State Astronomy Colloquium

03/2016: San Jose State Physics Colloquium

03/016: Herzberg Institute of Astrophysics Colloquium

03/2016: University of British Columbia Astronomy Colloquium

01/2016: Northwestern CIERA Theory Seminar

05/2015: Max Planck Institute for Radio Astronomy Special Colloquium

05/2015: Invited ALMA Community Day Talk, Tucson,AZ

02/2015: National Radio Astronomy Observatory-Socorro Colloquium

12/2014: National Radio Astronomy Observatory-Green Bank Colloquium

07/2014: Los Alamos National Laboratory Astrophysics Colloquium

03/2014: Joint University of Virginia / National Radio Astronomy Observatory Colloquium

02/2014: University of New Mexico Astrophysics Colloquium

Conference Talks

10/2021: "NASA Eyes, Kansas Minds II: JWST Virtual Event", University of Kansas

09/2020: CON-Quest

11/2017: "Harvard Heidelberg 2017: Star Formation Across the Universe", Boston, MA

11/2017: "Northeast Radio Observatory Corporation (NEROC) Radio Science Symposium", MIT Haystack

06/2017: "Behind the Curtain of Dust II", Sesto, Italy

01/2017: "Star Formation and Nearby Galaxies with JWST", Pasadena, CA

07/2016: "IAU 322: The Multi-Messenger Astrophysics of the Galactic Centre", Palm Cove, Australia

02/2016: "Dynamics and accretion at the Galactic Center", Aspen, CO

12/2015: "US Radio Futures Meeting", Chicago, IL

03/2015: "Tools for Astronomical Big Data", Tucson, AZ

07/2014: "Behind the Curtain of Dust: The molecular view of activity in (U)LIRGS", Sesto, Italy

01/2014: "Science with the Atacama Pathfinder Experiment (APEX)", Ringberg Castle, Germany

01/2014: 223rd Meeting of the American Astronomical Society, Washington, DC

10/2013: "IAU 303 The Galactic Center: Feeding and Feedback in a Normal Galactic Nucleus", Santa Fe, NM

06/2013: "Regulation of Star Formation in Molecular Gas", Ringberg Castle, Germany

01/2013: 221st Meeting of the American Astronomical Society, Long Beach, CA

06/2012: 220th Meeting of the American Astronomical Society, Anchorage, AK

12/2010: "Star Formation Under Extreme Conditions: the Galactic Center", Besançon, France

Visitor Seminars

11/2018: Brandeis University Dark Universe Seminar

08/2018: Lunch Seminar, Indiana University, Bloomington, IN

05/2017: Guest Seminar, Boston University, Boston, MA

06/2016: Guest Seminar, University of Manchester, England

06/2016: Guest Seminar, Universitat Köln, Germany

10/2015: NOAO FLASH seminar Tucson, AZ

05/2015: ESO Wine and Cheese talk, Garching, Germany

09/2014: Origins Seminar, Tucson, AZ

02/2014: Visitor Talk at Max Planck Institute for Astronomy, Heidelberg, Germany

01/2014: ESO Lunch Talk, Garching, Germany

01/2014: Lunch Talk, National Radio Astronomy Observatory, Socorro, NM

01/2013: Guest Seminar, Leiden, The Netherlands

12/2012: Guest Seminar, ETH Institute For Astronomy, Zurich, Switzerland

11/2012: Planet & Star Formation Seminar, MPIA, Heidelberg, Germany

07/2012: Lunch Talk, National Radio Astronomy Observatory, Socorro, NM

03/2011: Lunch Talk, National Radio Astronomy Observatory, Socorro, NM

Blackboard Talks

04/2015: ESO Informal Discussion, Garching, Germany

09/2014: NOAO Coffee discussion, Tucson, AZ

Publications

Total number of citations: 3308; H-Index: 33

All Refereed Publications

Highlights

* ***indicates supervised student***

[12] **Mills, Elisabeth A. C.**, Natalie O. Butterfield, Hauyu Baobab Liu, Dani Lipman, Adam Ginsburg, Mattia C. Sormani, Jonathan D. Henshaw, Cara D. Battersby, Ashley T. Barnes, Simon C. O. Glover, Francisco Nogueras-Lara, Mark R. Morris, Juergen Ott, Cornelia Lang, Claire Cook, and Xinyu Mai. "Reconciling 3D Models for the Central 10 parsecs of the Milky Way." In: *arXiv e-prints*, arXiv:2603.02211 (Mar. 2026), arXiv:2603.02211. DOI: 10.48550/arXiv.2603.02211. arXiv: 2603.02211 [astro-ph.GA].

[11] **Mills, E. A. C.**, M. Gorski, K. L. Emig, A. D. Bolatto, R. C. Levy, A. K. Leroy, A. Ginsburg, J. D. Henshaw, L. K. Zschaechner, S. Veilleux, K. Tanaka, D. S. Meier, F. Walter, N. Krieger, and J. Ott. "Clustered Star Formation in the Center of NGC 253 Contributes to Driving the Ionized Nuclear Wind." In: *The Astrophysical Journal* 919.2, 105 (Oct. 2021), p. 105. DOI: 10.3847/1538-4357/ac0fe8. arXiv: 2106.14970 [astro-ph.GA].

[10] Xing Lu, **Mills, Elisabeth A. C.**, Adam Ginsburg, Daniel L. Walker, Ashley T. Barnes, Natalie Butterfield, Jonathan D. Henshaw, Cara Battersby, J. M. Diederik Kruijssen, Steven N. Longmore, Qizhou Zhang, John Bally, Jens Kauffmann, Jürgen Ott, Matthew Rickert, and Ke Wang. "A Census of Early-phase High-mass Star Formation in the Central Molecular Zone." In: *The Astrophysical Journal Supplement* 244.2, 35 (Oct. 2019), p. 35. DOI: 10.3847/1538-4365/ab4258. arXiv: 1909.02338 [astro-ph.GA].

[9] **Mills, E. A. C.**, J. Corby, *__Clements, A. R.__, N. Butterfield, P. A. Jones, M. R. Cunningham, and J. Ott. "A Centimeter-wave Study of Methanol and Ammonia Isotopologues in Sgr B2(N): Physical and Chemical Differentiation between Two Hot Cores." In: *The Astrophysical Journal* 869.2, 121 (Dec. 2018), p. 121. DOI: 10.3847/1538-4357/aaed3f. arXiv: 1810.12852 [astro-ph.GA].

[8] **Mills, E. A. C.**, A. Ginsburg, *__Clements, A. R.__, P. Schilke, Á. Sánchez-Monge, K. M. Menten, N. Butterfield, C. Goddi, A. Schmiedeke, and C. G. De Pree. "Discovery of $^{14}NH_3$ (2,2) Maser Emission in Sgr B2 Main." In: *The Astrophysical Journal Letters* 869.1, L14 (Dec. 2018), p. L14. DOI: 10.3847/2041-8213/aaf237. arXiv: 1810.09567 [astro-ph.GA].

[7] **Mills, E. A. C.**, A. Ginsburg, K. Immer, *__Barnes, J. M.__, L. Wiesenfeld, A. Faure, M. R. Morris, and M. A. Requena-Torres. "The Dense Gas Fraction in Galactic Center Clouds." In: *The Astrophysical Journal* 868.1, 7 (Nov. 2018), p. 7. DOI: 10.3847/1538-4357/aae581. arXiv: 1810.00266 [astro-ph.GA].

[6] **Mills, Elisabeth A. C.** and Cara Battersby. "Origins of Scatter in the Relationship between HCN 1-0 and Dense Gas Mass in the Galactic Center." In: *The Astrophysical Journal* 835.1, 76 (Jan. 2017), p. 76. DOI: 10.3847/1538-4357/835/1/76. arXiv: 1701.04822 [astro-ph.GA].

[5] **Mills, Elisabeth A. C.**, Aditya Togi, and Michael Kaufman. "Hot Molecular Gas in the Circumnuclear Disk." In: *The Astrophysical Journal* 850.2, 192 (Dec. 2017), p. 192. DOI: 10.3847/1538-4357/aa951f. arXiv: 1701.04826 [astro-ph.GA].

[4] **Mills, E. A. C.**, N. Butterfield, D. A. Ludovici, C. C. Lang, J. Ott, M. R. Morris, and S. Schmitz. "Abundant CH_3OH Masers but no New Evidence for Star Formation in GCM0.253+0.016." In: *The Astrophysical Journal* 805.1, 72 (May 2015), p. 72. DOI: 10.1088/0004-637X/805/1/72. arXiv: 1503.08137 [astro-ph.GA].

[3] **Mills, E. A. C.**, R. Güsten, M. A. Requena-Torres, and M. R. Morris. "The Excitation of HCN and HCO^+ in the Galactic Center Circumnuclear Disk." In: *The Astrophysical Journal* 779.1, 47 (Dec. 2013), p. 47. DOI: 10.1088/0004-637X/779/1/47. arXiv: 1309.7412 [astro-ph.GA].

[2] **Mills, E. A. C.** and M. R. Morris. "Detection of Widespread Hot Ammonia in the Galactic Center." In: *The Astrophysical Journal* 772.2, 105 (Aug. 2013), p. 105. DOI: 10.1088/0004-637X/772/2/105. arXiv: 1306.0953 [astro-ph.GA].

[1] **Mills, E.**, M. R. Morris, C. C. Lang, H. Dong, Q. D. Wang, A. Cotera, and S. R. Stolovy. "Properties of the Compact H II Region Complex G-0.02-0.07." In: *The Astrophysical Journal* 735.2, 84 (July 2011), p. 84. DOI: 10.1088/0004-637X/735/2/84. arXiv: 1102.2533 [astro-ph.GA].

Published Articles

[73] Linjing Feng, Sihan Jiao, Fengwei Xu, Hauyu Baobab Liu, Xing Lu, Neal J. Evans II, **Mills, Elisabeth A. C.**, Attila Kovács, Qizhou Zhang, Yuxin Lin, Jingwen Wu, Chao-Wei Tsai, Di Li, Zhi-Yu Zhang, Zhiqiang Yan, Hao Ruan, Fangyuan Deng, Yuanzhen Xiong, and Ruofei Zhang. "Tails of Gravity: Persistence of Star Formation in the Central Molecular Zone." In: *The Astrophysical Journal* 998.2, 224 (Feb. 2026), p. 224. DOI: 10.3847/1538-4357/ae29e6. arXiv: 2511.20300 [astro-ph.GA].

[72] Sebastian Lopez, Colton Ring, Adam K. Leroy, Serena A. Cronin, Alberto D. Bolatto, Laura A. Lopez, Vicente Villanueva, Deanne B. Fisher, Todd A. Thompson, Grant P. Donnelly, Lee Armus, Torsten Böker, Leindert A. Boogaard, Martha L. Boyer, Ryan Chown, Daniel A. Dale, Keaton Donaghue, Kimberly Emig, Simon C. O. Glover, Rodrigo Herrera-Camus, Ralf S. Klessen, Thomas S.-Y. Lai, Laura Lenkić, Rebecca C. Levy, David S. Meier, **Mills, Elisabeth**, Juergen Ott, Evan D. Skillman, J. D. T. Smith,

Elizabeth J. Tarantino, Sylvain Veilleux, Fabian Walter, and Paul P. van der Werf. "JWST Observations of Starbursts: Polycyclic Aromatic Hydrocarbons Closely Trace the Cool Phase of M82's Galactic Wind." In: *The Astrophysical Journal Letters* 999.1, L7 (Mar. 2026), p. L7. DOI: 10.3847/2041-8213/ae4508. arXiv: 2510.01314 [astro-ph.GA].

[71] Francisco Nogueras-Lara, Ashley T. Barnes, Jonathan D. Henshaw, Karl Fiteni, Yoshiaki Sofue, Rainer Schödel, Álvaro Martínez-Arranz, Mattia C. Sormani, Jairo Armijos-Abendaño, Laura Colzi, Izaskun Jiménez-Serra, Víctor M. Rivilla, Pablo García, Adam Ginsburg, Yue Hu, Ralf S. Klessen, J. M. Diederik Kruijssen, Volker Tolls, Alex Lazarian, Dani R. Lipman, Steven N. Longmore, Xing Lu, Sergio Martín, Denise Riquelme-Vásquez, Jaime E. Pineda, Álvaro Sánchez-Monge, Arianna Vasini, and **Mills, Elisabeth A. C.** "Unveiling the 3D structure of the central molecular zone from stellar kinematics and photometry: The 50 and 20 km/s clouds." In: *Astronomy and Astrophysics* 706, A18 (Jan. 2026), A18. DOI: 10.1051/0004-6361/202556047. arXiv: 2601.05252 [astro-ph.GA].

[70] Yoshiaki Sofue, Steven N. Longmore, Daniel Walker, Adam Ginsburg, Jonathan D. Henshaw, John Bally, Ashley T. Barnes, Cara Battersby, Laura Colzi, Paul Ho, Izaskun Jimenez-Serra, J. M. Diederik Kruijssen, **Mills, Elizabeth**, Maya A. Petkova, Mattia C. Sormani, Jen Wallace, Jairo Armijos-Abendaño, Zi-Xuan Feng, Karl Fiteni, Pablo García, Savannah Gramze, Christian Henkel, Pei-Ying Hsieh, Ralf S. Klessen, Francisco Nogueras-Lara, Dylan M. Paré, Victor M. Rivilla, and Álvaro Sánchez-Monge. "Rotation and stability of the circumnuclear gas disk in the Galactic Center potential by the ALMA CMZ Exploration Survey (ACES)." In: (Feb. 2026). DOI: 10.1093/pasj/psaf159. arXiv: 2512.22751 [astro-ph.GA].

[69] Cara Battersby, Daniel L. Walker, Ashley Barnes, Adam Ginsburg, Dani Lipman, Danya Alboslani, H. Perry Hatchfield, John Bally, Simon C. O. Glover, Jonathan D. Henshaw, Katharina Immer, Ralf S. Klessen, Steven N. Longmore, **Mills, Elisabeth A. C.**, Sergio Molinari, Rowan Smith, Mattia C. Sormani, Robin G. Tress, and Qizhou Zhang. "3D CMZ. I. Central Molecular Zone Overview." In: *The Astrophysical Journal* 984.2, 156 (May 2025), p. 156. DOI: 10.3847/1538-4357/adb5f0. arXiv: 2410.17334 [astro-ph.GA].

[68] Cara Battersby, Daniel L. Walker, Ashley Barnes, Adam Ginsburg, Dani Lipman, Danya Alboslani, H. Perry Hatchfield, John Bally, Simon C. O. Glover, Jonathan D. Henshaw, Katharina Immer, Ralf S. Klessen, Steven N. Longmore, **Mills, Elisabeth A. C.**, Sergio Molinari, Rowan Smith, Mattia C. Sormani, Robin G. Tress, and Qizhou Zhang. "3D CMZ. II. Hierarchical Structure Analysis of the Central Molecular Zone." In: *The Astrophysical Journal* 984.2, 157 (May 2025), p. 157. DOI: 10.3847/1538-4357/adb844. arXiv: 2410.17332 [astro-ph.GA].

[67] Natalie O. Butterfield, Larry K. Morgan, Ashley T. Barnes, Adam Ginsburg, Savannah Gramze, Mark R. Morris, Mattia C. Sormani, Cara D. Battersby, Charlie Burton, Allison H. Costa, **Mills, Elisabeth A. C.**, Jürgen Ott, Michael Rugel, and Harrison West. "Discovery of a Giant Molecular Cloud at the Midpoint of the Galactic Bar Dust Lanes: M4.7-0.8." In: *The Astrophysical Journal* 988.1, 99 (July 2025), p. 99. DOI: 10.3847/1538-4357/adc687. arXiv: 2503.14174 [astro-ph.GA].

[66] Katarzyna M. Dutkowska, Gijs Vermariën, Serena Viti, Izaskun Jiménez-Serra, Laura Colzi, Laura A. Busch, Víctor M. Rivilla, **Mills, Elisabeth A. C.**, Sergio Martín, Christian Henkel, Pablo García, Xing Lu, Miriam G. Santa-Maria, Jairo Armijos-Abendaño, Yue Hu, Jürgen Ott, Kai Smith, Fengwei Xu, Shaoshan Zeng, Álvaro Sánchez-Monge, Anika Schmiedeke, Jaime E. Pineda, Steven N. Longmore, and Thanja Lamberts. "Chemical templates of the Central Molecular Zone: Shock and protostellar object signatures under Galactic Center conditions." In: *Astronomy and Astrophysics* 703, A46 (Nov. 2025), A46. DOI: 10.1051/0004-6361/202556188. arXiv: 2508.10759 [astro-ph.GA].

[65] Deanne B. Fisher, Alberto D. Bolatto, John Chisholm, Drummond Fielding, Rebecca C. Levy, Elizabeth Tarantino, Martha L. Boyer, Serena A. Cronin, Laura A. Lopez, J. D. Smith, Danielle A. Berg, Sebastian Lopez, Sylvain Veilleux, Paul P. van der Werf, Torsten Böker, Leindert A. Boogaard, Laura Lenkić, Simon C. O. Glover, Vicente Villanueva, Divakara Mayya, Thomas S.-Y. Lai, Daniel A. Dale, Kimberly L. Emig, Fabian Walter, Monica Relaño, Ilse De Looze, **Mills, Elisabeth A. C.**, Adam K. Leroy, David S. Meier, Rodrigo Herrera-Camus, and Ralf S. Klessen. "JWST observations of starbursts: cold clouds and plumes

launching in the M 82 outflow." In: *Monthly Notices of the Royal Astronomical Society* 538.4 (Apr. 2025), pp. 3068–3083. DOI: 10.1093/mnras/staf363. arXiv: 2405.03686 [astro-ph.GA].

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The Magnetic Field in Large Filaments in the Galactic Center." In: *arXiv e-prints*, arXiv:2511.18029 (Nov. 2025), arXiv:2511.18029. DOI: 10.48550/arXiv.2511.18029. arXiv: 2511.18029 [astro-ph.GA].

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Other Publications

Reviews

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Edited Volumes

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White Papers and Reports

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[3] Adam K. Leroy, Eric Murphy, Lee Armus, Crystal Brogan, Jennifer Donovan Meyer, Aaron Evans, Todd Hunter, Kelsey Johnson, Jin Koda, David S. Meier, Karl Menten, **Mills, Elizabeth**, Emmanuel Momjian, Juergen Ott, Frazer Owen, Mark Reid, Erik Rosolowsky, Eva Schinnerer, Nicholas Scoville, Kristine Spekkens, Liese van Zee, and Tony Wong. "Next Generation Very Large Array Memo No. 7 Science Working Group 2: "Galaxy Ecosystems": The Matter Cycle in and Around Galaxies." In: *arXiv e-prints*, arXiv:1510.06431 (Oct. 2015), arXiv:1510.06431. DOI: 10.48550/arXiv.1510.06431. arXiv: 1510.06431 [astro-ph.GA].

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Conference Proceedings

[16] T. M. Candelaria, D. S. Meier, J. Ott, and **Mills, E. A. C.** "Heating Molecular Gas in the CMZ." In: *New Horizons in Galactic Center Astronomy and Beyond*. Ed. by M. Tsuboi and T. Oka. Vol. 528. Astronomical Society of the Pacific Conference Series. July 2021, p. 113.

[15] K. Immer, M. J. Reid, A. Brunthaler, K. M. Menten, Q. Zhang, X. Lu, **Mills, E. A. C.**, A. Ginsburg, J. Henshaw, S. Longmore, D. Kruijssen, and T. Pillai. "How Maser Observations Unravel the Gas Motions in the Galactic Center." In: *New Horizons in Galactic Center Astronomy and Beyond*. Ed. by M. Tsuboi and T. Oka. Vol. 528. Astronomical Society of the Pacific Conference Series. July 2021, p. 71.

[14] Tierra M. Candelaria, David S. Meier, Juergen Ott, and **Mills, Elisabeth A. C.** "Extended Hot Gas in the Galactic Center." In: *The 35th Annual New Mexico Symposium*. Ed. by A. D. Kapinska. Feb. 2020, p. 16.

[13] Ian Crossfield, Becky Flores, Josh Lothringer, **Mills, Elisabeth**, Jessica Valverde, Richard Freedman, and David Coria. "Isotopic Abundances of Dwarf Stars." In: *Ground-Based Thermal Infrared Astronomy - Past, Present and Future*. Oct. 2020, 11, p. 11. DOI: 10.5281/zenodo.4249883.

[12] K. Immer, M. Reid, A. Brunthaler, K. Menten, Q. Zhang, X. Lu, **Mills, E. A. C.**, A. Ginsburg, J. Henshaw, S. Longmore, D. Kruijssen, and T. Pillai. "How maser observations unravel the gas motions in the Galactic Center." In: *Astrophysical Masers: Unlocking the Mysteries of the Universe*. Ed. by A. Tarchi, M. J. Reid, and P. Castangia. Vol. 336. Aug. 2018, pp. 176–179. DOI: 10.1017/S1743921317010213.

[11] C. Battersby, E. Keto, Q. Zhang, S. N. Longmore, J. M. D. Kruijssen, T. Pillai, J. Kauffmann, D. Walker, X. Lu, A. Ginsburg, J. Bally, **Mills, E. A. C.**, J. Henshaw, K. Immer, N. Patel, V. Tolls, A. Walsh, K. Johnston, and L. C. Ho. "A Brief Update on the CMZoom Survey." In: *The Multi-Messenger Astrophysics of the Galactic Centre*. Ed. by Roland M. Crocker, Steven N. Longmore, and Geoffrey V. Bicknell. Vol. 322. Jan. 2017, pp. 90–94. DOI: 10.1017/S1743921316012266. arXiv: 1610.05805 [astro-ph.GA].

[10] N. Butterfield, C. C. Lang, **Mills, E. A. C.**, D. Ludovici, J. Ott, and M. R. Morris. "Molecular and ionized gas kinematics in the GC Radio Arc." In: *The Multi-Messenger Astrophysics of the Galactic Centre*. Ed. by Roland M. Crocker, Steven N. Longmore, and Geoffrey V. Bicknell. Vol. 322. Jan. 2017, pp. 133–136. DOI: 10.1017/S1743921316012242. arXiv: 1610.00028 [astro-ph.GA].

[9] **Mills, E.** "The State of Future Observations of the Center of our Galaxy as a Window into the Past State of our Universe." In: *Frank N. Bash Symposium 2015 (BASH2015)*. Jan. 2015, 8, p. 8. DOI: 10.22323/1.261.0008.

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[4] H. Dong, Q. D. Wang, A. Cotera, S. Stolovy, M. R. Morris, J. Mauerhan, **Mills, E. A.**, G. Schneider, and C. Lang. "HST Paα Survey of the Galactic Center - Seeking the Missing Young Stellar Populations within the Galactic Center." In: *The Galactic Center: a Window to the Nuclear Environment of Disk Galaxies*. Ed. by M. R. Morris, Q. D. Wang, and F. Yuan. Vol. 439. Astronomical Society of the Pacific Conference Series. May 2011, p. 104. DOI: 10.48550/arXiv.1002.2611. arXiv: 1002.2611 [astro-ph.GA].

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Teaching and Mentoring Summary

I run a vibrant and active research group consisting of undergraduates, post-baccalaureate researchers, visiting international masters students, and graduate students. My mentoring focuses on developing research and professional skills that facilitate student growth and independence and are transferable to a variety of careers. The success of this mentoring is seen in multiple prestigious awards won by my students. In the classroom, I work to create an environment that empowers students as learners, helping them articulate goals and track their progress toward these goals throughout the semester. My teaching is highly rated, and in 2020 I was recognized as department Undergraduate Teacher of the Year.

Honors

2025: KU Course Release for Increased Scholarly Productivity (CRISP) Award

2023: Nominee, KU Grant Goodman Undergraduate Mentor Award

2020: KU Physics and Astronomy Undergraduate Teacher of the Year

Mentoring

Graduate Students:

- Utsav Siwakoti — *2025-present*
- Katelyn Sheriff — *2024-present*
- Ashley Lieber — *2022-present*
  - *KU Self Fellow*
- Xinyu Mai — *2020-present*

  - *Finalist, 2022 KU Three Minute Thesis Competition*
- Benjamin Moreau *2021-2023*
- Kurt Hamblin *2020-2021*
- J. Andrew Casey-Clyde (MS: SJSU, Pursuing PhD at UConn) *2016-2020*

Post-baccalaureate and Visiting Researchers:

- Claire Cook *2023-present*
- Andrew Merritt *Fall 2024*
- Ryan Cosgrove *Fall 2024*
- Louen Robin (Ecole des Mines de Saint-Etienne, France) *2023-2024*
- Matthilde Pottier (Ecole des Mines de Paris, France) *2021*

Undergraduate Students:

- Megan Weis *Spring 2026 - present*
- Alex Ledesma *Spring 2026 - present*
- Kai Smith *Spring 2024 - present*
  - *2024 Departmental JUST Research Fellowship* ($4000)
  - *2025 Ad Astra Kansas Foundation Space Scholarship*
- Parker Wise *Spring 2023 - Spring 2025*
- Ryan Cosgrove *Fall 2023 - Summer 2024*
- Andrew Merritt *Spring 2024 - summer 2024*
- Cody Myers *Fall 2022 - Spring 2024*
- Maurissa Higgins *Summer 2022 REU student*
- Keaton Donaghue *Spring 2022 - present*
  - *2024 NSF GRFP Award*
- Anja Prandtner *Spring 2022*
- Kody Kirk *Fall 2020*
- Larry Zieammerman *Fall 2020*
- Maxine Case *Summer 2020-Spring 2021*
- Garrett Crossnoe *Summer 2020-Fall 2020*
- Riley Weller *Summer 2020*
- Anna Davidson *Summer 2020*
- Katelin Waters *Summer 2020*
- Kevin Gima (MS: North Dakota State) *Summer 2015*
- Tierra Candelaria (Pursuing PhD at NMT) *Summer 2015*
- Jonathan Barnes (MS: CSU-LA, PhD Howard University) *Summer 2014*
- Aspen Clements (PhD: UVa) *Summer 2014*
- Binqing "Iris" Sun (PhD: UMass *Summer 2014*
- Alex Teachey (Phd: Columbia, Postdoc: ASIAA) *Summer 2014*

Teaching

Fall 2020, 2023, 2025 (University of Kansas): A792: Special Topics (Interstellar Medium)

- Graduate course on the physics of the interstellar medium
- Course Materials: https://github.com/eacmills/grad-ism

Spring 2020, 2022, 2024, 2026 (University of Kansas): A592: Galactic and Extragalactic Astronomy

- Junior-level majors course on the interstellar medium and galaxies
- Course Materials: https://github.com/eacmills/undergrad-ism

Spring 2021,2023 (University of Kansas): A191: Contemporary Astronomy
- Undergraduate non-majors introductory astronomy course
- Course Materials: https://github.com/eacmills/intro-astro

Spring 2019 (Boston University): Introduction to Astronomy
- Non-majors introduction to solar system astronomy through the BU Prison Education Program

Spring 2018 (Boston University): Journal Club
- Taught Astrophysics and Space Physics Graduate Student Professional Development Seminar

Fall 2017 (Boston University): Introduction to Astronomy
- Co-taught a non-majors introduction to solar system astronomy through the BU Prison Education Program

Spring 2017 (San Jose State University): Introduction to Astronomy, Astrophysics II
- Taught one section of Introduction to Astronomy, a non-majors introduction to astronomy course
- Taught one section of Astrophysics II, a course on the ISM and stellar interiors for Physics majors

Fall 2016 (San Jose State University): Introduction to Astronomy
- Taught two sections of a non-major introduction to astronomy course

Outreach

Public Talks

10/2025: Invited Speaker, 'New Generations Society of Lawrence', Lawrence, KS

04/2025: Invited Speaker, 'Astronomy Associates of Lawrence', Lawrence, KS

01/2023: Invited Speaker, 'Wonders of the Universe lecture series', Fromm Institute

06/2022: KU Public Telescope Night, Lawrence, KS

04/2017: Keynote Speaker, 'Women in Stem Bay Area Research Exposition', Mountainview, CA

04/2014: NRAO Visitors Committee, Socorro, NM

Other Activities

Fall 2020: Volunteered time for office hours for LHS Physics students during instructor vacancy

2017: Instructor, BU Prison Education Program

2017: Panelist, 'Women in Stem Bay Area Research Exposition (WiSTEM BARE)'

2017: San Jose State University Latinx-Chicanx Student Success Task Force
- Organized a three part workshop on succeeding in STEM in classes, research, and graduate school

2014-2015: Led public VLA tours

2013: Writer for Astrobites
- Author of blog posts to summarize recent papers for a target audience of Undergraduate students

2010–2011: UCLA Astronomy Outreach Co-Coordinator

2009–2012: UCLA Astronomy Outreach Volunteer
- Founding volunteer of an annual UCLA Astronomy Open House for hands-on science experience
- Developed and built new outreach activities for use at open houses and schools, including an interactive star wall

- Led more than 10 volunteer events on campus and at local underserved schools
- Presented over 20 planetarium shows to diverse audiences

Service and Leadership Summary

Through my service I seek to improve the environment of our department and to promote research excellence at KU by raising the profile of our department, college, and university in the surrounding community. My service highlights include substantially revamping our astrophysics group seminar by inviting 2 dozen high-profile junior researchers to give virtual talks and engage in discussion with graduate students, and contracting with a consultant to provide training to our department on inclusive practices. My external service is dominated by work at the national and international level. I have maintained a high-profile of service work with the National Radio Astronomy Observatory (NRAO), where I currently serve on the Users Committee for NRAO facilities, chair a panel administering student grants, and am a member of the Science Advisory Council that is planning for the Next Generation VLA.

Service

External Professional Activities

Review Panelist

2020-present: NRAO Student Observing Support Committee member (Chair since 2024)
2024: Discussion panelist, JWST Cycle 3
2023: External panelist, JWST Cycle 2
2022: External science reviewer, LMT proposals
2022: Cycle 9 ALMA Proposal Review Committee
2019-2020: Science Review Panel Chair and member of the TAC for NRAO proposals
2018: Science Review Panel member for SOFIA proposals
2018: Science Review Panel member for NRAO proposals
2017–2019: Science Review Panel member for ALMA proposals
2017: Grant review panelist for NASA
2015, 2017, 2019, 2025: Grant review panelist for NSF
2014–2015: Technical reviewer for NRAO proposals

Advisory Committees

2023–present: Member, NRAO Users Committee
2017–2020: Member, Far Infrared Science Interest Group Leadership Council
2016–2018: Executive Committee Member of Astronomy Allies
2016–2017: Member, Latinx-Chicanx student success task force, San Jose State University
2014–2016: Advisory Board Member of the National Astronomy Consortium

Scientific Meeting Organization

- Co-Chair, PRIMA and the Future of Far-Infrared Science (May 2025, Pasadena, CA)
- SOC, 52nd Mid-America Regional Astronomy Conference (December 2024, Lawrence, KS)
- LOC, annual Mid-America Regional Astronomy Conference (2020-present, Midwest Region)
- Organizer, Far-IR Probe Science Case Workshop (March 25, 2022, Virtual)

- Organizer, Far Infrared Science Interest Group Splinter Session at AAS 233 (2018, Seattle, WA)
- SOC, New Horizons in Galactic Center Astronomy and Beyond (2019, Yokohama, Japan)
- SOC, New England Regional Star Formation Meeting (2018, Boston, MA)
- Organizer, Far Infrared Science Interest Group Splinter Session at AAS 231 (2018, Washington, DC)
- SOC, Next Generation VLA Meeting at the 215th AAS (2015, Seattle, WA)
- SOC, Life-cycle of gas in galaxies: A local perspective (2015, Dwingeloo, The Netherlands)

Miscellaneous Service

2013–Present: Papers Refereed (MNRAS, ApJ, ApJL, A&A, A&A Letters)

2022–2025: Co-chair of PRIMA Nearby Galaxy Ecosystems science working group

2023: External evaluator for a new Astrophysics PhD program at University of Oklahoma

2021: NASA Early-Career Roundtable Discussion Panel

2018: Spring semester Astrophysics Colloquium organizer, Boston University

2014–2015: AAS Chambliss Poster Judge

2014–2015: Led a student summer program at NRAO-Socorro for the National Astronomy Consortium

2015: ALMA Community Day Organizer (Tucson, AZ)
- Gave invited talks on research and an overview of NRAO facilities; assisted users with proposal preparation

2014–2015: Lunch Talk Coordinator, NRAO-Socorro

2014: 14th NRAO Synthesis Imaging Workshop (Socorro, NM)
- Led observing preparation and data reduction tutorials
- Created and ran a Careers & Diversity Panel

2012: NRAO Resident Shared-Risk Observing Program (3 months, Socorro, NM)
- Tested and documented new tools for VLA proposal preparation
- Redesigned the user interface for the CASA software webpage

05/2012: 13th NRAO Synthesis Imaging Workshop(Socorro, NM)
- Led observing preparation tutorials

University Service Activities

Physics and Astronomy Department

- Planning Committee *Fall 2025-Present*
- Department Webmaster *Spring 2024-Present*
- Evaluations Committee *Fall 2022 - Fall 2025*
- Colloquium Committee *Fall 2020-Fall 2022*
- Organized outside consultation on department atmosphere and inclusive teaching practices *Fall 2021*
  - A colloquium on collective pedagogy
  - A facilitated department discussion on hiring practices and community support
  - Two training sessions (empathic teaching and community-building)
  - A graduate student workshop on positive self-identity
- Astronomy and Space Physics Seminar Organizer *Fall 2021*
- Bridge Program Oversight Committee *Fall 2021*
- Graduate Recruiting Committee *Fall 2020-Spring 2021*
- Bridge Program Oversight Committee Chair *Fall 2020-Spring 2021*
- Graduate Committee *Spring 2020; Fall 2021 – Spring 2022*
- Center for Teaching Excellence Ambassador *Spring 2020*

College and University

- Review panel member for REI (Research Excellence Initiative) *Spring 2024-Present*