

EVAN C. MAYER

CURRICULUM VITAE

Contact

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Education

THE UNIVERSITY OF ARIZONA
DEPARTMENT OF ASTRONOMY AND ASTROPHYSICS

2021-PRESENT
PhD Research

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF PHYSICS

2013-2017
AB, Physics (2017)

Research Interests

Radio astronomy	Line intensity mapping	Star formation	Interferometry
Instrument design	Antenna design and simulation	Receiver design	Cryogenic engineering
Signal processing	GPU cross-correlators	Data processing pipelines	Data visualization
Accessible science	Software-defined radio	Community science	Science communication

Publications

- [8] Bracks, Justin S., [...], **Mayer, Evan C.**, et al. **June 2026**. “Forecasting the Cross Correlation of Terahertz Intensity Mapper [C ii] Line Intensity Maps with Euclid Galaxies”. en. In: *The Astrophysical Journal* 1005.1. Publisher: The American Astronomical Society, p. 17. ISSN: 0004-637X. DOI: 10.3847/1538-4357/ae75b5. URL: <https://doi.org/10.3847/1538-4357/ae75b5> (visited on 08/05/2026).
- [7] Butler, Victoria L., [...], **Mayer, Evan C.**, et al. **Sept. 2026**. “TES Bolometer Design and Testing for the Tomographic Ionized-Carbon Mapping Experiment Millimeter Array”. In: *IEEE Transactions on Applied Superconductivity* 36.6, pp. 2103507–2103507. ISSN: 1558-2515. DOI: 10.1109/TASC.2026.3694584. URL: <https://ieeexplore.ieee.org/document/11523582> (visited on 08/05/2026).
- [6] **Mayer, Evan C.** et al. **May 2026**. “Development of a planar cable-driven parallel robot for sub-millimeter and terahertz beam mapping measurements”. en. In: *Journal of Astronomical Telescopes, Instruments, and Systems* 12.2. Publisher: SPIE, p. 024007. ISSN: 2329-4124. DOI: 10.1117/1.JATIS.12.2.024007. URL: <https://www.spiedigitallibrary.org/journals/Journal-of-Astronomical-Telescopes-Instruments-and-Systems/volume-12/issue-02/024007/Development-of-a-planar-cable-driven-parallel-robot-for-submillimeter/10.1117/1.JATIS.12.2.024007> (visited on 07/30/2026).
- [5] Yang, Selina F., [...], **Mayer, Evan C.**, et al. **May 2026**. “TIME Commissioning Observations. I. Mapping Dust and Molecular Gas in the Sgr A Molecular Cloud Complex at the Galactic Center”. en. In: *The Astrophysical Journal* 1003.1. Publisher: The American Astronomical Society, p. 23. ISSN: 0004-637X. DOI: 10.3847/1538-4357/ae606c. URL: <https://doi.org/10.3847/1538-4357/ae606c> (visited on 08/05/2026).
- [4] Keenan, Ryan P., [...], **Mayer, Evan C.**, et al. **Oct. 2024**. “The Arizona Molecular ISM Survey with the SMT: Survey Overview and Public Data Release”. en. In: *The Astrophysical Journal* 975.1. Publisher: The American Astronomical Society, p. 150. ISSN: 0004-637X. DOI: 10.3847/1538-4357/ad7504. URL: <https://doi.org/10.3847/1538-4357/ad7504> (visited on 02/05/2026).

- [3] Liu, Lun-Jun, [...], **Mayer, Evan C.**, et al. **July 2024**. “Cosmic Ray Susceptibility of the Terahertz Intensity Mapper Detector Arrays”. en. In: *Journal of Low Temperature Physics* 216.1, pp. 195–207. ISSN: 1573-7357. DOI: 10.1007/s10909-024-03123-z. URL: <https://doi.org/10.1007/s10909-024-03123-z> (visited on 10/11/2024).
- [2] Barry, P. S., [...], **Mayer, E.**, et al. **2018a**. “Design and Performance of the Antenna-Coupled Lumped-Element Kinetic Inductance Detector”. In: *Journal of Low Temperature Physics* 193.3-4, pp. 176–183. ISSN: 15737357. DOI: 10.1007/s10909-018-1943-y.
- [1] Kim, Junhan, [...], **Mayer, Evan**, et al. **July 2018**. “A VLBI receiving system for the South Pole Telescope”. en. In: *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy IX*. Vol. 10708. SPIE, p. 669. DOI: 10.1117/12.2301005. URL: <https://www.spiedigitallibrary.org/conference-proceedings-of-spie/10708/2301005/A-VLBI-receiving-system-for-the-South-Pole-Telescope/10.1117/12.2301005> (visited on 08/05/2026).

Conference Proceedings

- [6] Thimmaiah, Drishikaa, [...], **Mayer, Evan**, et al. **Feb. 2026**. “Thermal models for subsystems of the Terahertz Intensity Mapper balloon mission”. In: vol. 247. ADS Bibcode: 2026AAS...24720307T, p. 203.07. URL: <https://ui.adsabs.harvard.edu/abs/2026AAS...24720307T> (visited on 08/05/2026).
- [5] Butler, Victoria L., [...], **Mayer, Evan C.**, et al. **2024**. “TIME: the Tomographic Ionized-carbon Mapping Experiment: an update on design, characterization, and data from the 2022 commissioning observations”. In: *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XII*. Ed. by Jonas Zmuidzinas and Jian-Rong Gao. Vol. 13102. Backup Publisher: International Society for Optics and Photonics. SPIE, 131022G. DOI: 10.1117/12.3021442. URL: <https://doi.org/10.1117/12.3021442>.
- [4] Marrone, Daniel P., [...], **Mayer, Evan C.**, et al. **2022a**. “The terahertz intensity mapper: a balloon-borne imaging spectrometer for galaxy evolution”. In: *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XI*. Ed. by Jonas Zmuidzinas and Jian-Rong Gao. Vol. 12190. Backup Publisher: International Society for Optics and Photonics. SPIE, p. 1219008. DOI: 10.1117/12.2630644. URL: <https://doi.org/10.1117/12.2630644>.
- [3] Vaughan, Benjamin, [...], **Mayer, Evan**, et al. **June 2022**. “First Light of the Tomographic Ionized Mapping Experiment”. In: *American Astronomical Society Meeting Abstracts*. Vol. 54. American Astronomical Society Meeting Abstracts, p. 314.03.
- [2] Khaire, Trupti, [...], **Mayer, Evan**, et al. **Jan. 2018**. “Development of mm-wave sensors for measurements of the Cosmic Microwave Background”. In: *APS March Meeting Abstracts*. Vol. 2018. APS Meeting Abstracts, R08.010.
- [1] Kim, Junhan, [...], **Mayer, Evan**, et al. **May 2018**. “A VLBI receiving system for the South Pole Telescope”. In: *Proc. SPIE 10708, Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy IX, 107082S (9 July 2018)*. ISSN: 1996756X. Austin, p. 97. ISBN: 978-1-5106-1969-2. DOI: 10.1117/12.2301005. URL: <https://arxiv.org/abs/1805.09346>.

Presentations

- [4] **Mayer, Evan C. Jan. 2026**. “The Terahertz Intensity Mapper (TIM): Fielding the Next Generation of Far-Infrared Detector Arrays”. In: *URSI NRSM 2026*.
- [3] **Mayer, Evan C. May 2025**. “A Star Camera Trade Study for the Terahertz Intensity Mapper (TIM)”. In: *2025 Scientific Ballooning Technologies Conference*.
- [2] Agrawal, Shubh, [...], **Mayer, Evan**, et al. **June 2024**. “The Terahertz Intensity Mapper (TIM)”. In: *Line Intensity Mapping 2024 Conference*. URL: <https://publish.illinois.edu/line-intensity-mapping-2024/program/>.
- [1] **Mayer, Evan C.** et al. **May 2023**. “Practical Photogrammetry for the Terahertz Intensity Mapper Telescope”. In: *2023 Scientific Ballooning Technologies Conference*.

Honors and Awards

2026	EARLY CAREER MEMBER USNC-URSI Commission J: Radio Astronomy
2017	BACHELOR OF ARTS IN PHYSICS WITH HONORS The University of Chicago
2013-2017	DEAN'S LIST The University of Chicago

Theses

2017	SIMULATION OF SCALABLE LENSED DUAL SLOT ANTENNAS The University of Chicago
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Skills

Python	C/C++	MATLAB	bash	git
Software defined radio	Signal processing	Simulation dev	Failure analysis	Agile processes
ANSYS HFSS	Fusion360	Solidworks	3D Printing	Soldering

Work Experience

2017-2021

RAYTHEON TECHNOLOGIES

Design Realization

- Performed research and literature surveys for, wrote requirements for, wrote unit tests for, implemented, tested, validated, and documented program-critical models of aerospace hardware and operating environments, all in a collaborative software development environment
- Performed massively parallelized Monte Carlo analysis and root cause failure analysis on large sets of telemetry data from six degree-of-freedom system-of-systems simulations
- Presented model development progress and future work to government and company leadership to secure program funding and pass design reviews

2015-2017

THE UNIVERSITY OF CHICAGO

Kavli Institute for Cosmological Physics

- Designed and simulated scalable focal plane array antennas for astronomy with microwave kinetic inductance detectors (MKIDs)
- Designed, simulated, produced, and integrated equipment for cryogenic testing of MKIDs
- Bluefors dilution refrigerator component fabrication and maintenance

2015-2015 & 2017

THE UNIVERSITY OF ARIZONA

Steward Observatory

- Designed, simulated, produced drawings of, and integrated mm-wave optical component support structures for South Pole Telescope Very Long Baseline Interferometry receiver for Event Horizon Telescope project – components were essential for groundbreaking 2017 observations
- Performed VLBI receiver cryostat maintenance & wiring
- Designed environmental seals around VLBI receiver components for South Pole Telescope equipment cabin