Evan C. Mayer
Curriculum Vitae

Contact

933 N Cherry Ave
Room 341
Tucson, AZ 85721, USA

Tel: +1(520) 990-5527
evanmayer@arizona.edu

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	Active galactic nuclei	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

[2] Liu, Lun-Jun 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).

[1] Barry, P. S. et al. **2018**. "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. arXiv: arXiv:1801.06265v1.

Conference Proceedings

[5] Butler, Victoria L. 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. International Society for Optics and Photonics. SPIE, 131022G. DOI: 10.1117/12.3021442. URL: https://doi.org/10.1117/12.3021442.

[4] 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, 314.03, p. 314.03.

[3] Marrone, Daniel P. et al. **2022b**. "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. International Society for Optics and Photonics. SPIE, p. 1219008. DOI: 10.1117/12.2630644. URL: https://doi.org/10.1117/12.2630644.

[2] 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)*. Austin, p. 97. ISBN: 9781510619692. DOI: 10.1117/12.2301005. arXiv: 1805.09346. URL: https://arxiv.org/abs/1805.09346.

[1] 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, R08.010.

Presentations

[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

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

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
- Performed VLBI receiver cryostat maintenance & wiring
- Designed environmental seals around VLBI receiver components for South Pole Telescope equipment cabin