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Brandon Sike – CV

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3rd year Astronomy & Astrophysics PhD candidate at the University of Michigan working with Professor Mateusz Ruszkowski. Expected graduation in Spring 2028.

Research Interests:
Computational astrophysics, MHD simulations, dynamical effects of cosmic ray feedback in galaxies regarding star formation and galactic outflows, cosmic ray transport in the ISM.

Education:
B.S. in Physics from the University of Texas at Dallas (2023)
[Expected Fall 2025] M.S. in Astronomy & Astrophysics from the University of Michigan
[In-progress; expected Spring 2028] PhD in Astronomy & Astrophysics from the University of Michigan

Publications:
Sike, B., Thomas, T., Ruszkowski, M., Pfrommer, C., & Weber, M. 2025, "*Cosmic-Ray-driven Galactic Winds with Resolved Interstellar Medium and Ion-neutral Damping"*, ApJ, Volume 987, Issue 2, id.204, 21 pp., doi: 10.3847/1538-4357/adda3d (ADS)

Sike, B., Ruszkowski, M., Gnedin, O. Y., Chen, Y., Weber, M., Thomas, T., Pfrommer, C., "*Resolving Star Cluster Formation in Galaxy Simulations with Cosmic Ray Feedback"*, Submitted to ApJ, arXiv:2510.06134 (ADS)

Felix, S., Gogoi, A., Shavelle, K., Sike, B., King, L., Andreon, S., Chadayammuri, U., ZuHone, J., Romero, C., "*Decoding the early Universe: exploring a merger scenario for the high-redshift cluster JKCS041 using numerical models*", MNRAS, Volume 534, Issue 4, pp.3676-3687, doi: 10.1093/mnras/stae2338 (ADS)

Presentations:
Invited talk at TMEX 2025: Theory meeting experiment: Particle astrophysics and Cosmology, *"Simulating Cosmic Ray Feedback in the Resolved ISM: Star Formation and Outflows*"

Talk at AAS Winter 2025: "*Too Hot, Too Cold, or Just Right? Simulating Cosmic Ray-Driven Galactic Winds with Resolved ISM and Ion-Neutral Damping*"

Poster at the 18th Potsdam Thinkshop, Summer 2025: "*High-Resolution Simulations of Cosmic Ray Feedback: Star Formation and Multiphase Outflows*"

[Scheduled for December 2025] Talk at Princeton's SFIR: [title TBD]

Awards:
- National Science Foundation Graduate Research Fellow (2025-present)
- Rackham Merit Fellowship/Rackham Sciences Award (2023-2025)
- ACCESS Explore and Discover computing allocations (2023-present)
- Rackham Precandidate Research Grant
- Rackham Professional Development Grant
- Rackham Conference Travel Grant x2

Peer review:

- Referee on two papers for the Astrophysical Journal
- Co-referee on a paper for Nature Communications

Teaching experience:

Undergraduate TA for Extragalactic Astrophysics at UT Dallas, Winter 2023