

JACK T. DINSMORE

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Education

- Sept 2022 – present **Stanford University**
PhD in Physics (in progress, estimated completion 2027)
GPA: 4.0/4.0
- Sept 2018 – May 2022 **Massachusetts Institute of Technology**
BS in Physics; Minors in Astronomy and Mathematics; Concentration in Music
GPA: 5.0/5.0

Awards & Honors

- April 2024 • Received the NSF Graduate Research Fellowship Program Honorable Mention.
- May 2022 • Received Barrett Prize for excellence in astrophysics research on recommendation from Prof. Tracy Slatyer.
- May 2022 • Inducted into Phi Beta Kappa and Sigma Pi Sigma honors societies for excellence in academics with a humanities element (Phi Beta Kappa) and in physics (Sigma Pi Sigma).
- May 2020 • Accepted at competitive REU program at Lehigh University. See research with Prof. Pepper below.

Presentations & Press

- May 2024 • Presentation to the Stanford workshop Fields, Flows, and Filaments in the Magnetic ISM regarding pulsar X-ray filaments. *~ 40 in attendance*
- June 2023 • Presentation to Asteroids, Comets, and Meteorites conference on extracting asteroid densities from tidal torque. *~ 200 in attendance*
- October 2022 • Press release culminating the new asteroid observing technique described in [4]. *MIT News*. Featured in an *Astrobites* post.
- April 2022 • Presentation to Apophis T-7 Years on how to map Apophis's internal structure with Earth's gravity. *~ 200 in attendance*
- Aug 2021 • Concluding research presentation to PRISM, an MIT undergraduate research conference, for my research on the Galactic Center Excess. *~ 30 in attendance*
- Aug 2020 • Research presentation to conclude my REU at Lehigh University to REU faculty, students, and members of the public. *~ 25 in attendance*

Research Experience

- **Astrophysics:** High energy astrophysics, pulsars [3,5,7], time-domain astrophysics [6], the interstellar medium.
- **Physics:** General relativity [1], particle physics [2], condensed matter, statistics [3,5].
- **Data Science:** Designing new statistical methods [4,7], analysis of data [3,5,6,7], machine learning [2,7].
- **Planetary Science:** Asteroids [4], planetary rings, tidal interactions.
- **Computer Science:** Machine learning [2,4], performance computing [2,3,4].

Peer Reviewed Publications

- [7] **Jack T. Dinsmore** and Roger W. Romani. Polarization Leakage and the IXPE Point-spread Function. *The Astrophysical Journal*, 962(2):183, feb 2024
- [6] Tobin M. Wainer, Gail Zasowski, Joshua Pepper, Tom Wagg, Christina L. Hedges, Vijith Jacob Poovelil, Tara Fetherolf, James R. A. Davenport, P. Marios Christodoulou, **Jack T. Dinsmore**, Avi Patel, Kameron Goold, and Benjamin J. Gibson. Catalog of Integrated-light Star Cluster Light Curves in TESS. *The Astronomical Journal*, 166(3):106, aug 2023
- [5] Josephine Wong, Roger W. Romani, and **Jack T. Dinsmore**. Improved Measurements of the IXPE Crab Polarization. *The Astrophysical Journal*, 953(1):28, jul 2023
- [4] **Jack T Dinsmore** and Julien de Wit. Constraining the Interiors of Asteroids Through Close Encounters. *Monthly Notices of the Royal Astronomical Society*, 520(3):3459–3475, 10 2022
- [3] **Jack T. Dinsmore** and Tracy R. Slatyer. Luminosity Functions Consistent with a Pulsar-Dominated Galactic Center Excess. *JCAP*, 06(06):025, 2022
- [2] Jeffrey Krupa, Kelvin Lin, Maria Acosta Flechas, **Jack Dinsmore**, Javier Duarte, Philip Harris, Scott Hauck, Burt Holzman, Shih-Chieh Hsu, Thomas Klijnsma, Mia Liu, Kevin Pedro, Dylan Rankin, Natchanon Suaysom, Matt Trahms, and Nhan Tran. GPU Coprocessors as a Service for Deep Learning Inference in High Energy Physics. *Machine Learning: Science and Technology*, 2(3):035005, apr 2021
- [1] **Jack Dinsmore**, Patrick Draper, David Kastor, Yue Qiu, and Jennie Traschen. Schottky Anomaly of deSitter Black Holes. *Class. Quant. Grav.*, 37(5):054001, 2020

In addition to these, I have submitted one scientific grant application as the principal investigator and made significant contributions to two others as a co-author.

Teaching Experience & Outreach

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| Spring 2024 | • Mentor for undergraduate student research project at Stanford |
| Winter 2024 | • TA for PHYSICS 120: Intermediate Electromagnetism at Stanford (average rating of 4.7/5 in effectiveness from student feedback) |
| 2023–2024 | • Mentor for the Stanford Future Advancers of Science and Technology (FAST) program |

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| Spring 2023 | • Lab TA for PHYSICS 43: Electromagnetism at Stanford (average rating of 4.7/5 in effectiveness from student feedback) |
| Winter 2022 | • TA and course material designer for new MIT physics class 8.S50 on statistics |
| 2022–present | • Volunteer for KIPAC outreach programs |
| Spring 2019 | • Problem set grader for Physics I (8.012) under Prof. Phil Harris. |
| Fall 2018 | • SAT Math section teacher for MIT Academic Teaching Initiative. |

Additional Open Source Work

I make most of my research code publicly available online on my [professional GitHub](#). I have also built many non-research open-source projects on my [personal GitHub](#), including the following highlights

- A pedagogical [blog](#) on statistical inference
- Rust “crates” (code packages) for various scientific tasks
- [wikid](#), a command-line utility to compile markdown to HTML with special emphasis on scientific plots. I used it to build my statistics blog.