Tal Adi

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Research Interests

My research focuses on data-driven cosmology, dark matter theories, gravitational waves, and multi-messenger cosmology, with growing interest in incorporating data science and machine learning techniques to address challenges in large astrophysical datasets.

Professional Experience

2024- UNIVERSITY OF SOUTHERN CALIFORNIA, US
Postdoctoral research scholar

Education

2013-17 ARIEL UNIVERSITY, ISRAEL
Bachelor of Science in Physics, November 2016
Summa cum laude
Bachelor of Science in Electrical Engineering, November 2017
Magna cum laude

2018-20 TEL AVIV UNIVERSITY, ISRAEL
Master of Science in Physics, December 2020
Advisor: Prof. Nissan Itzhaki

2020-24 BEN-GURION UNIVERSITY OF THE NEGEV, ISRAEL
Doctor of Philosophy in Physics
Advisor: Prof. Ely D. Kovetz

Awards And Honors

- President's Excellence Award at Ariel University
- Dean's List 2014-17 at Ariel University
- The Negev Scholarship awarded by the Kreitman school at Ben-Gurion University of the Negev
- BGU Kreitman School Dean's certificate of excellence in research, 2021
- AABGU/Philadelphia Academic Bridge Travel Award for 2022-23
- Dean's Prize of Ben-Gurion University of the Negev, 2024
- Scholar of the Zuckerman Israeli Postdoctoral Scholars Program, 2024

Mentoring

- Hector Afonso Cruz (PhD candidate, Johns Hopkins University, 2022-23)
- Lena Fiala (Undergraduate, University of Southern California, 2025-present)
- Andria Toloraia (Undergraduate, University of Southern California, 2025-present)
- Lohith Saradhi Kandukuri (Master's student, University of Southern California, 2025-present)

Academic Positions

2016–17 Teaching Assistant, Physics Department of Ariel University, Israel

2018–20 Lab Instructor, Physics Department of Tel Aviv University, Israel

2020–24 Teaching Assistant, Physics Department of Ben-Gurion University of The Negev, Israel

Teaching

- Physics I for Physics Majors, Ariel University (AU), 2016-17
- Physics II for Physics Majors, AU, Summer 2016-17
- Analytical Mechanics for Physics Majors, AU, Fall 2016
- Numerical Physics I for Physics Majors, AU, Spring 2017
- Electrodynamics for Electrical Engineering Majors, AU, Spring 2017
- General Physics Lab II for Physics Majors, Tel Aviv University, 2018-20
- Physics I for Physics Majors, Ben-Gurion University of the Negev (BGU), 2020-22
- Quantum Physics I for Physics Majors, BGU, 2022-24
- Analytical Mechanics for Physics Majors, BGU, 2023-24

Academic Services

- Organized and ran the weekly CosmoLab research-seminar series (2025-present)
- Peer reviewer for *Physical Review D* (2025-present)

Conferences & Schools

2020 The 37th Advanced School in Theoretical Physics: New Ideas for Old Puzzles in Particle Physics, December 29, 2019 - January 9, 2020

2021 Division for Astronomy, Planetary and Space Sciences (DAPSS) Student Research Conference, June 11, 2021

2021 The 67th Annual Meeting of The Israel Physical Society (IPS), February 22, 2022

2022 The International Center for Theoretical Physics (ICTP) Summer School on Cosmology, July 4-15, 2022

2023 Astrophysics & Cosmology Student Conference (ASCOS III), August 22, 2023

2024 The 73rd Lindau Nobel Laureate Meeting, June, 2024

Talks

2020	Tel Aviv University Seminar, "Prospects for Solving the Hubble Tension"
2020	Johns Hopkins University Cosmology Seminar, "Prospects for Solving the Hubble Tension"
2021	Ariel University Seminar, "Prospects for Solving the Hubble Tension"
2021	DAPSS Student Research Conference Invited Plenary Talk, "The Hubble Tension: a major crisis in Cosmology?"
2022	Ben-Gurion University of the Negev University Astrophysics Seminar, "Probing Gravitational Slip with Strongly Lensed Fast Radio Bursts"
2022	IPS 67th Annual Meeting Invited Parallel Talk, "Probing Gravitational Slip with Strongly Lensed Fast Radio Bursts"
2023	University of Pennsylvania Cosmology Group Talk, "A Brief Review of the Hubble Tension in Light of Non-Minimally Coupled EDE"
2023	ASCOS III Selected Talk, "Primordial Magnetic Fields and Where to Find Them"
2024	Ben-Gurion University of the Negev University Astrophysics Seminar, "Cosmic Tensions, Novel Observables, and the Space in Between"
2025	University of Southern California Astrophysics Seminar, "Cosmic Tensions, Novel Observables, and the Space in Between"

Articles

1. **Tal Adi**, Ely D. Kovetz, "Can conformally coupled modified gravity solve the Hubble tension?" *Phys. Rev. D,* 103 no. 2, (2021) 023530, `arXiv:2011.13853`.
2. **Tal Adi**, Ely D. Kovetz, "Probing gravitational slip with strongly lensed fast radio bursts," *Phys. Rev. D,* 104 no. 10, (2021) 103515, `arXiv:2109.00403`.
3. **Tal Adi**, Hector Afonso G. Cruz, Marc Kamionkowski, "Primordial density perturbations from magnetic fields," *Phys. Rev. D,* 108 no. 2, (2023) 023521, `arXiv:2306.11319`.
4. **Tal Adi**, Sarah Libanore, Hector Afonso G. Cruz, Ely D. Kovetz, "Constraining Primordial Magnetic Fields with Line-Intensity Mapping," *JCAP*, 09 (2023) 035, `arXiv:2305.06440`.
5. Hector Afonso G. Cruz, **Tal Adi**, Jordan Flitter, Marc Kamionkowski, Ely D. Kovetz, "21-cm fluctuations from primordial magnetic fields," *Phys. Rev. D* 109 no. 2, (2024) 023518, `arXiv: 2308.04483`.
6. Théo Simon, **Tal Adi**, José Luis Bernal, Ely D. Kovetz, Vivian Poulin, and Tristan L. Smith, "Towards alleviating the H_0 and S_8 tensions with Early Dark Energy – Dark Matter drag," *Phys. Rev. D,* 111 no. 2, (2025) 023523, `arXiv: 2410.21459`
7. **Tal Adi**, Jordan Flitter, and Ely D. Kovetz, "Early Dark Energy Effects on the 21cm Signal," *Phys. Rev. D,* 111 no. 4, (2025) 043515, `arXiv: 2410.22424`
8. **Tal Adi**, "Lowering the Horizon on Dark Energy: A Late-Time Response to Early Solutions for the Hubble Tension," submitted to *Phys. Rev. Lett. (2025),* `arXiv: 2509.12331`