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Research Interests

Multi-phase interstellar medium; Galactic magnetism; dust polarization; Astrostatistics

Education

Ph.D., Physics, Stanford University Sept 2021 – Present
Topic: Physics of the multi-phase interstellar medium with a focus on the structure of the 3D Galactic magnetic field

B.Sc., Physics & Math, University of Michigan Sept 2016 – June 2020
Undergraduate thesis: “*Probing non-standard neutrino interactions with supernova neutrinos at Hyper-K*,” supervised by James D. Wells

Publications

1. **Minjie Lei**, S. E. Clark, “A New Constraint on the Relative Disorder of Magnetic Fields between Neutral ISM Phases,” arXiv preprint, [arXiv:2312.03846](https://arxiv.org/abs/2312.03846), 2023 (Submitted to ApJ)
2. **Minjie Lei**, S. E. Clark, “Probing the cold neutral medium through HI emission morphology with the scattering transform,” [The Astrophysical Journal](#), vol. 947, no. 2, 2023
3. **Minjie Lei**, K. V. Tsang, et al., “Implicit Neural Representation as a Differentiable Surrogate for Photon Propagation in a Monolithic Neutrino Detector,” 2022, [arXiv e-prints](#), [arXiv:2211.01505](https://arxiv.org/abs/2211.01505)
4. **Minjie Lei**, Noah Steinberg, & James D. Wells, “Probing non-standard neutrino interactions with supernova neutrinos at Hyper-K,” 2020, [JHEP](#), 01, 179
5. **Minjie Lei**, James D. Wells, “Minimally modified A_4 Altarelli-Feruglio model for neutrino masses and mixings and its experimental consequences,” 2020, [Phys. Rev. D](#), 102 (1), 016023
6. Kirill Pushkin, et al. “Study of radon reduction in gases for rare event search experiments,” 2018, [Nuclear Instruments and Methods in Physics Research Section A](#), 903, 267-276

Honours and Awards

2023-2025 **Stanford Graduate Fellowship**
2016-2020 **James B. Angell Scholar**, University of Michigan

Scientific Presentations

Invited Talks

Jan 2024 **Journal Club**; Pan-Experiment Galactic Science Group
February 2023 **ISM Seminar**; ENS Paris

Contributed Talks

July. 2023 **Interstellar Institute 6**; Institut Pascal - Université Paris-Saclay
Dec. 2022 **Galactic Science and CMB Foregrounds**; Core to Core CMB Workshop series

Teaching and Mentorship

Teaching Assistantships

Fall 2023 **Stars and Planets in a Habitable Universe** (Physics 15)

Winter 2023 **Stars and Planets in a Habitable Universe** (Physics 15)

Fall 2019 **Honors Physics I - Mechanics** (Physics 160)

Fall 2018 **Physics for the Life Sciences I** (Physics 135)

Student Mentorship

2023-204 **Abraar Saleem**, Stanford postbac scholar, Stanford KIPAC postbac program

2022-2023 **Amritpal Nijjar**, undergraduate at UCLA, Stanford PIE Program

2020-2021 **Jackie Zhao**, High school student, Minds Matter Philadelphia