Mahlet Shiferaw

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Keywords: Cosmology (343) – Large-scale structure of the universe (902) – Galaxy formation (595)

Education

2026 (expected) **Ph.D., Stanford University**, Physics
Dissertation: *Exploring the Galaxy-Dark Matter Connection*
Advisor: Risa Wechsler

2020 **A.B., Harvard College**, Astrophysics & Physics
Secondary in Studies of Women, Gender, and Sexuality
Magna Cum Laude with Highest Honors in Field. *Phi Beta Kappa*
Senior Thesis: *Building Mock Galaxy Catalogues to Test the Nature of Gravity*
Thesis Advisors: Sownak Bose, Daniel Eisenstein

Other Research Positions

During doctorate

2022 **Flatiron Machine Learning X Science Summer School**, Intern
Mentors: David Spergel, Miles Cranmer

Pre-doctorate

2020–2021 **Max Planck Institute for Gravitational Physics**, Fulbright U.S. Student Program Study/Research Fellow
Collaborators: Alessandra Buonanno, Serguei Ossokine

2019 **LIGO Summer Undergraduate Research Fellowship**, Caltech Summer Undergraduate Research Fellow
Mentor: Alan J. Weinstein

2018 **Northwestern University's CIERA Summer REU Program**, Summer Research Experiences for Undergraduates Student
Advisors: Claude-André Faucher-Giguère, Aaron Geller, Alex Richings, Alex Gurvich

Teaching and Pedagogy

2024 Teaching Assistant, *Stars and Planets in a Habitable Universe*
Prof. S. Clark, Stanford University

2023 Teaching Assistant, *Classical Mechanics Laboratory*
Lecturer C. Blakemore, Prof. E. A. Nanni, Stanford University

2023 Teaching Assistant, *Modern Physics Laboratory*
Lecturer R. Pam, Stanford University

Awards and Fellowships

2025–2026	Stanford Data Science Scholars Program
2025	Stanford Diversifying Academia, Recruiting Excellence (DARE) Doctoral Fellowship Alternate
2024–2026	Physics Department Fellowship
2022–2026	National Science Foundation Graduate Research Fellowship Program
2021–2024	Stanford Graduate Fellowship, Gabilan Fellow
2021–2023	Enhancing Diversity in Graduate Education Doctoral Fellowship Program
2021–2023	KIPAC Fellowship
2020–2021	Fulbright U.S. Student Program Study/Research Award
2020	National Science Foundation Graduate Research Fellowship Program, Honorable Mention
2019	SACNAS Travel Scholarship
2019	Carl A. Rouse Memorial Fellowship
2019	Eliot House Junior Prize in Physics
2018	Universities Space Research Association Frederick A. Tarantino Memorial Scholarship

Selected Invited Seminars

2024	Ludwig Maximilian University of Munich, Physical Cosmology Journal Club
2024	Princeton University, Dunkley Group Meeting

Conference and Workshop Presentations

2025	**Center for Decoding the Universe Annual Conference: Data-Driven Discovery in the Rubin Era**, Stanford University, Contributed Poster. *Simulation-Based Inference of Cosmological, Galaxy Bias, and Redshift-Space Parameters*
2025	**2025 Stanford Data Science Conference**, Stanford University, Contributed Poster. *Simulation-based inference of cosmological and galaxy bias parameters in redshift-space*
2024	**Summer School on Cosmology**, The Abdus Salam International Centre for Theoretical Physics, Contributed Talk. *Comparing Galaxy Formation Models using the Bias Expansion*
2024	**243rd American Astronomical Society Meeting**, New Orleans, Contributed Poster (403.24). *Comparing Galaxy Formation Models using the Bias Expansion*
2023	**KIPAC@20**, Stanford University, Contributed Poster. *Comparing Galaxy Formation Models using the Bias Expansion*
2023	**Future Cosmology**, Institut d'Études Scientifiques, Contributed Talk. *Comparing Galaxy Formation Models using the Bias Expansion*
2020	**235th American Astronomical Society Meeting**, Honolulu, Contributed Poster. *Building Mock Galaxy Catalogues to Test the Nature of Gravity*
2019	**The SACNAS National Diversity in STEM Conference**, Honolulu, Contributed Poster. *Optimal Mass, Spin, and Orientation Parameters for Detecting*

Higher Order Gravitational-wave Modes from Binary Black Hole Mergers

2019 **Conference for Undergraduate Women in Physics @ UMass Amherst**, University of Massachusetts Amherst, Contributed Poster. *Visualizing HII Abundance in FIRE Data*

2019 **233rd American Astronomical Society Meeting**, Seattle, Contributed Poster. *Visualizing HII Abundance in FIRE Data*

Outreach and Service

2025–Present Science Envoy, Wonderfest's *Science Envoy Program* (including planned live on-air interview with San Francisco's KPOO radio station)

2023–Present Volunteer, Community Day @ SLAC & Stanford (including tours of the VizLab)

2023–Present Mentor, Enhancing Diversity in Graduate Education Doctoral Fellowship

2022–2025 Co-President, Black in Physics @ Stanford

2023–2024 Volunteer, American Physics Society Conference for Undergraduate Women in Physics @ Stanford & SLAC

2023 Mentor, Stanford Physics, Identity, and Equity

2022–2023 Graduate Student Member, Physics Equity & Inclusion Committee

2021–2022 Graduate Student Member, Physics Recruiting & Outreach Committee

Collaborations

2024–Present **Graduate Student Member**, Dark Energy Spectroscopic Instrument

2024–Present **Graduate Student Member**, LSST Dark Energy Science Collaboration

Publications

Published (first author)

2412.06886 **Shiferaw, M.**, Kokron, N. , and Wechsler, R., 2025. *How do uncertainties in galaxy formation physics impact field-level galaxy bias?* ApJ, 989(2), p.218.

Published and in review (co-author)

2509.15890 Sinigaglia, F., Kitaura, F., **Shiferaw, M.**, Favole, G., Storey-Fisher, K., and Arsenov, N. *Fast and accurate Gaia-unWISE quasar mock catalogs from LPT and Eulerian bias.* In review at JCAP.

2303.18046 Ramos-Buades, A., Buonanno, A., Estellés, H., Khalil, M., Mihaylov, D. P., Ossokine, S., Pompili, L., and **Shiferaw, M.**, 2023. *SEOBNRv5PHM: Next generation of accurate and efficient multipolar precessing-spin effective-one-body waveforms for binary black holes.* Phys. Rev. D, 108(12), p.124037.

In Preparation

Shiferaw, M., Storey-Fisher, K., and Wechsler, R. *The Redshift and Luminosity Dependence of Clustering in Quaia.*

Shiferaw, M., Storey-Fisher, K., Wechsler, R., Angulo, R. E., and Pellejero-Ibañez, M. *Simulation-based inference of cosmological and galaxy bias parameters in redshift-space.* Early stages.