

# Hayden R. Foote

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Ph.D. Candidate  
Department of Astronomy / Steward Observatory  
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## EDUCATION

**In Progress: Doctor of Philosophy** in Astronomy and Astrophysics, expected 2026

The University of Arizona | Tucson, Arizona, USA  
Advisor: Prof. Gurtina Besla

**Master of Science** in Astronomy and Astrophysics, 2023

The University of Arizona | Tucson, Arizona, USA  
Thesis: *Structure, Kinematics, and Observability of the Large Magellanic Cloud's Dynamical Friction Wake in Cold vs. Fuzzy Dark Matter*  
Advisor: Prof. Gurtina Besla

**Bachelor of Arts** (*summa cum laude*, With Distinction) in Astronomy, 2020

The University of Colorado Boulder | Boulder, Colorado, USA  
Thesis: *Mass Segregation in Eccentric Nuclear Disks: Enhanced Tidal Disruption Event Rates for High Mass Stars*  
Advisor: Prof. Ann-Marie Madigan

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## AWARDS

UArizona College of Science Fellowship, 2020  
UArizona Theoretical Astrophysics Program travel grant, 2023  
UArizona Theoretical Astrophysics Program travel grant, 2024  
UArizona Theoretical Astrophysics Program travel grant, 2025  
UArizona Theoretical Astrophysics Program travel grant, 2026

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## POSITIONS

**Graduate Coordinator**, TIMESTEP, May 2025 - Present  
**Graduate Research Assistant**, Steward Observatory, January 2024 – Present  
**Graduate Teaching Assistant**, Steward Observatory, January 2023 – December 2023  
**Graduate Research Assistant**, Steward Observatory, August 2020 – December 2022  
**Undergraduate Research Assistant**, JILA (CU Boulder), January 2018 – June 2020

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## PEER-REVIEWED PUBLICATIONS

- *Segue 2 Recently Collided with the Cetus-Palca Stream: New Opportunities to Constrain Dark Matter in an Ultra-faint Dwarf*, **Hayden R. Foote**, Gurtina Besla, Nicolás Garavito-Camargo, Ekta Patel, Guillaume F. Thomas, Ana Bonaca, Adrian M. Price-Whelan, Annika H. G. Peter, Dennis Zaritsky, and Charlie Conroy 2025, *The Astrophysical Journal*, 979, 171
  - *Structure, Kinematics, and Observability of the Large Magellanic Cloud's Dynamical Friction Wake in Cold vs. Fuzzy Dark Matter*, **Hayden R. Foote**, Gurtina Besla, Philip Mocz, Nicolás Garavito-Camargo, Lachlan Lancaster, Martin Sparre, Emily C. Cunningham, Mark Vogelsberger, Facundo A. Gómez, and Chervin F. P. Laporte 2023, *The Astrophysical Journal*, 954, 163
  - *Mass Segregation in Eccentric Nuclear Disks: Enhanced Tidal Disruption Event Rates for High Mass Stars*, **Hayden R. Foote**, Aleksey Generozov, and Ann-Marie Madigan 2020, *The Astrophysical Journal*, 890, 175
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## PRESENTATIONS

- “A Close Encounter Between the Cetus-Palca Stream and the Segue 2 Ultra-faint Dwarf” – Contributed oral presentation at the “Gravity in the Local Group” conference, June 2025
- “A Close Encounter Between the Cetus-Palca Stream and the Segue 2 Ultra-faint Dwarf” – Contributed oral presentation at the “Streams24” conference, August 2024
- “The LMC’s Dynamical Friction Wake in Cold vs. Fuzzy Dark Matter” – Poster presentation at the “KITP Cosmic Signals of Dark Matter: New Synergies” conference, June 2024
- “The LMC’s Dynamical Friction Wake in Cold vs. Fuzzy Dark Matter” – Seminar at the Institute for Advanced Study, March 2024
- “Constraining Dark Matter with Dynamics in the Milky Way’s Stellar Halo” – Invited seminar at CU Boulder, February 2024
- “The LMC’s Dynamical Friction Wake in Cold vs. Fuzzy Dark Matter” – Contributed oral presentation at “The Milky Way is Not an Island” conference, January 2024
- “What is Dark Matter, Anyway?” – Public talk at Space Drafts 93, November 2023
- “The LMC’s Dynamical Friction Wake in Cold vs. Fuzzy Dark Matter” – Max Planck Institute for Astrophysics Cosmology Seminar, June 2023
- “The LMC’s Dynamical Friction Wake in Cold vs. Fuzzy Dark Matter” – Contributed oral presentation at the 54<sup>th</sup> Meeting of the Division on Dynamical Astronomy, May 2023
- “Making Observational Predictions for the LMC’s Dynamical Friction Wake” – Poster presentation at the 53<sup>rd</sup> Meeting of the Division on Dynamical Astronomy, May 2022
- “Studying Dynamical Friction on the LMC as a Dark Matter Probe” –

- Poster presentation at the 52<sup>nd</sup> Meeting of the Division on Dynamical Astronomy, May 2021
- “Mass Segregation in Eccentric Nuclear Disks” – Poster presentation at the 235<sup>th</sup> Meeting of the American Astronomical Society, January 2020.
  - “Mass Segregation in Eccentric Nuclear Disks” – CU Boulder CASA/JILA Seminar, October 2019.
  - “Vertical Mass Segregation in Eccentric Nuclear Disks” – Contributed talk at the 50<sup>th</sup> Meeting of the Division on Dynamical Astronomy, June 2019.
  - “Vertical Mass Segregation in Eccentric Nuclear Disks” – Poster presentation at the 50<sup>th</sup> Meeting of the Division on Dynamical Astronomy, June 2019.
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## TEACHING

**Teaching Assistant** for ASTR 170B (Exploring our Universe), University of Arizona, Fall 2023

**Teaching Assistant** for ASTR 400B (Theoretical Astrophysics), University of Arizona, Spring 2023

**Learning Assistant** for PHYS 1120 (General Physics 2), University of Colorado Boulder, Spring 2020

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## SERVICE

**Steward Observatory Values Committee**, October 2023 – May 2025

**Steward Observatory Diversity and Equity Initiative (SO-DEI) Admissions Task Force**, July 2020 – May 2023

**Tucson Astronomy on Tap (Space Drafts) Co-coordinator**, Spring 2022 - Present