

KAYLEE BARRERA

✉ kaylee.barrera@cfa.harvard.edu |  [kayleebarrera.github.io](https://github.com/kayleebarrera)

EDUCATION

Harvard University, Cambridge, MA

Ph.D in Astronomy and Astrophysics

September 2026 - present

Massachusetts Institute of Technology, Cambridge, MA

S.B in Earth, Atmospheric, and Planetary Sciences; S.B in Physics

September 2022 – May 2026

PUBLICATIONS

4. **Barrera, K.**, Blunt, S., Vanderburg, A., et al. “Cross Validation with eurydice Yields Reliable Planet Mass Constraints in the HD 63433 System,” *in revision with [The Astronomical Journal](#)*.
3. Brothers, T. C., Abbasi, F. N., Ekelmann, J., et al. (including **Barrera, K.**) “[Lightcurve and Rotation Period of Near-Earth Asteroid 887 Alinda During the 2025 Close Approach](#).” *Minor Planet Bulletin*, 52, 211 (2025)
2. Slivan, S. M., **Barrera, K.**, Colclasure, A. M., et al. “[Lightcurves and Derived Results for Koronis Family Member \(452\) Hamiltonia](#).” *Minor Planet Bulletin*, 51, 176 (2024)
1. Slivan, S. M., **Barrera, K.**, Colclasure, A. M., et al. “[Lightcurves and Derived Results for Koronis Family Member \(5139\) Rumoi Including a Discussion of Measurements for Epochs Analysis](#).” *Minor Planet Bulletin*, 51, 6 (2024)

RESEARCH EXPERIENCE

MIT Kavli Institute & Lamat REU Program

June 2024 – September 2026

Advisors: Dr. Sarah Blunt & Prof. Andrew Vanderburg

Developed eurydice, a Python package for cross-validating Gaussian Process models of stellar activity in radial velocity data. Modeled the HD 63433 planetary system as a test case to compare multiple GP modeling approaches and assess the reliability of planet mass measurements. Submitted a [first-author paper](#) to *The Astronomical Journal* and publicly released [eurydice](#).

MIT Planet Formation Lab

October 2025 – May 2026

Advisor: Prof. Richard Teague

Conducted senior thesis research applying parametric models to high-resolution ALMA molecular line emission observations of the massive, edge-on protoplanetary disk Gomez’s Hamburger, using RadJAX to constrain vertical temperature profiles.

MIT Remote Observing Lab

February 2025 – June 2025

Advisors: Dr. Michael Person & Dr. Artem Burdanov

Built upon 12.411 Astronomy Field Camp projects by applying time-series analysis using Python and Tycho Tracker to generate light curves and determine rotational periods of a near-Earth asteroid and a brown dwarf binary in a rare triple system.

MIT Wallace Observatory

May 2023 – August 2023

Advisor: Dr. Michael Person

Captured 100+ hours of photometric data with 5 telescopes as part of a 6-person team. Processed light curves for 8 Koronis asteroids and Pluto to study rotational and surface variability using AstroImageJ and Python. Produced two co-authored publications in *Minor Planet Bulletin*.

AWARDS & FELLOWSHIPS

NSF Graduate Research Fellowship (\$159,000)	2026 - Present
The W.O Crosby Award for Sustained Excellence , MIT EAPS Dept.	2026
Sigma Pi Sigma , MIT Physics Chapter	2026
Phi Beta Kappa , MIT Chapter	2026
Lamat Fellowship , University of California, Santa Cruz	2025
The EAPS Undergraduate Achievement Award , MIT EAPS Dept.	2025

RESEARCH & CONFERENCE PRESENTATIONS

Talks:

2025 Lamat Research Symposium (Santa Cruz, CA)	August 2025
Untangling Stellar Noise: Evaluating Radial Velocity Models with eurydice	
MIT Astronomy Field Camp Symposium at the IAC (La Laguna, Tenerife, Spain)	January 2025
Characterizing the Photometric Variability of the Triple Brown Dwarf System VHS1256-1257	
MIT Stellar Contamination Workshop (Cambridge, MA)	September 2024
eurydice: A New Software Package for Evaluating Gaussian Process Models of Stellar Activity Signals	
Summer MIT Kavli Institute Undergraduate Research Forum (Cambridge, MA)	August 2024
eurydice: A New Software Package for Evaluating Gaussian Process Models of Stellar Activity Signals	

Posters:

247th American Astronomical Society Meeting (Phoenix, AZ)	January 2026
Untangling Stellar Noise: Evaluating Gaussian Process Radial Velocity Models with eurydice	
EAPS Community Research Showcase (Cambridge, MA)	September 2025
Evaluating Gaussian Process Models of Stellar Activity in Radial Velocity Data with eurydice	
2025 Sagan Summer Workshop (Virtual)	July 2025
Evaluating Gaussian Process Models of Stellar Activity in Radial Velocity Data	
Extremely Precise Radial Velocities 6 (Porto, Portugal)	July 2025
Evaluating Gaussian Process Models of Stellar Activity in Radial Velocity Data	
Emerging Researchers in Exoplanet Science Symposium X (Princeton, NJ)	June 2025
Evaluating Gaussian Process Models of Stellar Activity in Radial Velocity Data	

LEADERSHIP

MIT Undergraduate Women in Physics (UWiP)

<i>Co-President</i>	March 2025 – May 2026
<i>Social Chair</i>	March 2024 – March 2025

Earth, Atmospheric, and Planetary Sciences (EAPS) Undergraduate Council

<i>EAPS Student Advisory Committee Undergraduate Representative</i>	May 2025 – May 2026
<i>President</i>	February 2025 – February 2026

OUTREACH

Letters to a Pre-Scientist, Pen Pal

September 2025 – Present

Wallace Observatory Outreach Program, Volunteer Tour Guide

Fall 2025

TEACHING

Undergraduate TA for 12.409 (Hands-On Astronomy: Observing Stars and Planets)

Spring 2025

Department of Earth, Atmospheric, and Planetary Sciences, MIT

Last updated: Aug 15, 2026