

# CHRISTOPHER LINDSAY

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## EDUCATION

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### Yale University

*Astronomy PhD Candidate. (M.S., M.Phil. in Astronomy, 2022)*

August 2020 - Present

*New Haven, CT*

### University of Southern California (USC)

*B.S. Astronomy; B.A. Environmental Studies; Jazz Studies Minor*

August 2016 - May 2020

*Los Angeles, CA*

## RESEARCH EXPERIENCE

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### Graduate Research in Stellar Astrophysics (Gruber Science Fellow)

*Advisor: Professor Sarbani Basu*

August 2020 - present

*Yale University*

- I analyze stellar oscillation data from NASA's *Kepler* and TESS missions to model stellar interiors and determine fundamental stellar parameters, especially age, with the goal of improving our understanding of the Milky Way's formation through more accurate and precise asteroseismic age determinations.
- I have also advised and currently advise multiple Yale University undergraduate and more junior graduate students on stellar astrophysics projects related to machine learning detection of stellar/solar flares, RR Lyrae stellar modeling, population III star asteroseismology, and more.

### Undergraduate/Graduate Research in Helioseismology

*Advisor: Professor Edward Rhodes*

August 2016 - August 2020

*University of Southern California*

- I collected helioseismic data at the Mount Wilson Observatory and processed solar oscillation data from the Solar Dynamics Observatory and Solar and Heliospheric Observatory satellites.

## PUBLICATIONS

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[[Listed Here in a Public ADS Library](#)]

### First Author Papers

- **Christopher Lindsay**, et al., 2025 (*In Review, ApJ*) *The Effect of Different Methods for Accounting for  $\alpha$ -enhancement on the Asteroseismic Modeling of Metal-Poor Stars.*
- **Christopher Lindsay**, Marc Hon, et al., 2025 (*ApJ*, [989:189](#)) *Precise Asteroseismic Ages for the Helmi Streams*
- **Christopher Lindsay**, Joel Ong, and Sarbani Basu, 2024 (*ApJ*, [965:171](#)) *Fossil Signatures of Main-sequence Convective Core Overshoot Estimated through Asteroseismic Analyses*
- **Christopher Lindsay**, Joel Ong, and Sarbani Basu, 2023 (*ApJ*, [950:19](#)) *Near-Core Acoustic Glitches are Not Oscillatory: Consequences for Asteroseismic Probes of Convective Boundary Mixing*
- **Christopher Lindsay**, Joel Ong, and Sarbani Basu, 2022 (*ApJ*, [931:116](#)) *Mixed Mode Asteroseismology of Red Giant Stars Through the Luminosity Bump*

### Co-author Papers

- Daniel Chang\*, **Christopher Lindsay**, and Sarbani Basu, 2025 (*in prep*) *Using Convolutional Neural Networks to Detect Solar Flares using Sun-as-a-star Observations.* \*Supervised Student
- Angharad Weeks, Daniel Huber, et al. (incl. **Christopher Lindsay**), 2025 (*in press, MNRAS*) *Asteroseismology of the ancient naked-eye exoplanet host star  $\nu^2$  Lupi.*
- Claudia Reyes, Dennis Stello, et al. (incl. **Christopher Lindsay**), 2025 (*in press, Nature*) *Acoustic modes in M67 cluster stars trace deepening convective envelopes.*

- Joel Ong, **Christopher Lindsay**, et al., 2024 (*in press, ApJ*) *Resolving an Asteroseismic Catastrophe: Structural Diagnostics from p-mode Phase Functions off the Main Sequence.*
- Hans Deeg, et.al. (incl. **C. Lindsay**), 2021 (*in press, JAAVSO*) *Maintaining the Ephemeris of 20 CoRoT Planets: Transit Minimum Times and Potential Transit Timing Variations*
- J. Cabrera, et.al. (incl. **C. Lindsay**), 2015 (*in press, A&A*) *Transiting exoplanets from the CoRoT space mission XXVII. CoRoT-28b, a planet orbiting an evolved star, and CoRoT-29b, a planet showing an asymmetric transit*

### Non-Refereed Papers

- Y. Asali, K. Gerbig, A. Ghosh, **C. Lindsay**, Z. Shen, and M. Geha, 2022 (*in press, Bulletin of the AAS*, [54\(1\)](#)) *A Standardized Framework for Collecting Graduate Student Input in Faculty Searches*

## INVITED TALKS AND SEMINARS

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<b>TESS Science Talk at the MIT Kavli Institute</b> <i>Precise Asteroseismic Ages for Red Giants in the Helmi Streams using TESS</i>	April 9th, 2025 Cambridge, USA
<b>MIT Monday Afternoon Talk</b> <i>Stellar Astrophysics and Galactic Archaeology with Asteroseismology</i>	April 7th, 2025 Cambridge, USA
<b>Astro Seminar Talk at the American Museum of Natural History</b> <i>Probing the Evolution and Internal Structures of Stars with Asteroseismology</i>	November 14th, 2023 New York City, USA
<b>IfA Astrocoffee Talk at the University of Hawai‘i</b> <i>Prospects for Probing the Evolution and Internal Structures of Stars with Asteroseismology</i>	January 13th, 2023 Honolulu, USA
<b>TEDx Talk at the University of Southern California</b> <i>Exoplanet Astronomy and the Nobel Prize Hidden in Plain Sight</i>	March 25th, 2022 Los Angeles, USA

## CONTRIBUTED CONFERENCE PRESENTATIONS

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<b>TASC9/KASC16: Contributed Talk</b> <i>Precise Asteroseismic Ages for Red Giants in the Helmi Streams</i>	July 2025 Vienna, Austria
<b>TASC9/KASC16: Poster</b> <i>Asteroseismic Modeling of <math>\alpha</math>-Enhanced, Metal-Poor Stars</i>	July 2025 Vienna, Austria
<b>European Astronomical Society Annual Meeting: Contributed Talk</b> <i>Precise Asteroseismic Ages for the Helmi Stream</i>	June 2025 Cork, Ireland
<b>TESS Science Conference 3 at MIT: Contributed Talk</b> <i>Asteroseismic modeling of metal-poor, <math>\alpha</math>-rich giants in the Halo</i>	July/August 2024 Cambridge, MA
<b>TASC8/KASC15: Contributed Talk</b> <i>Age Dating <math>\alpha</math>-element Enhanced Stars in the Galactic Halo with Asteroseismology</i>	July 2024 Porto, Portugal
<b>3rd workshop on Artificial Intelligence for Space-Science Research: Virtual Talk</b> <i>Detecting Solar Flares in Sun-as-a-Star Observations with Conv. Neural Networks</i>	May 2024 Melbourne, Australia
<b>TASC7/KASC14: Contributed Talk and Served on the LOC</b> <i>Fossil Signatures of Main-Sequence Convective Cores</i>	July 2023 Honolulu, Hawai‘i
<b>TASC6/KASC13: Poster</b> <i>Red Giant Seismology: Seismic Signatures of Convective Overshoot</i>	July 2022 Leuven, Belgium
<b>Cool Stars 21: Poster</b> <i>Mixed Mode Asteroseismology of Red Giants Through the Luminosity Bump</i>	July 2022 Toulouse, France

**AAS 240: Contributed Talk**  
*Red Giant Seismology: Seismic Signatures of Convective Overshoot*

June 15th 2022  
Pasadena, CA

**TESS Science Conference 2: ePoster**  
*Red Giant Seismology: Seismic Signatures of Convective Overshoot*

August 2021  
Online and Cambridge, MA

## ADDITIONAL CONFERENCE AND WORKSHOPS ATTENDED

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**Porto Summer School on Asteroseismology 2024: from Pixels to Stellar Ages** July 2024  
*Attended workshop as a student* Via do Conde, Portugal

**Life and Death: From Stars to Compact Objects** August-September 2022  
*Attended workshop as a student* Asiago, Italy

**MESA Summer School 2022** August 2022  
*Attended workshop as a student* Santa Barbara, CA

**Fifty Years of the Skumanich Relations** February 2022  
*Attended* Boulder, CO

## TEACHING FELLOW EXPERIENCE

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**ASTR 550: Stellar Astrophysics** Fall 2023, Spring 2025  
*Instructor: Professor Sarbani Basu* Yale University

**ASTR 120: Galaxies and the Universe** Spring 2022  
*Instructor: Michael Faison* Yale University

**PHYS 401: Advanced Classical Physics** Fall 2021  
*Instructor: Professor Nikhil Padmanabhan* Yale University

**ASTR 120: Galaxies & the Universe** Summer 2021  
*Instructor: Professor Robert Zinn* Yale University

**ASTR 135: Archaeoastronomy** Spring 2021  
*Instructor: Michael Faison* Yale University

**ASTR 155: Introduction to Astronomical Observing** Fall 2020  
*Instructor: Michael Faison* Yale University

## ADDITIONAL WORK & SERVICE EXPERIENCE

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**McDougal Fellow: Graduate Student Professional Development** August 2024 - Present  
*Graduate School of Arts and Sciences* Yale University

- Contributing to the intellectual and professional development of the Yale graduate student community by holding professional development workshops and administering internship opportunities.

**Graduate Student Affiliate, Benjamin Franklin College** October 2022 - Present  
*Benjamin Franklin College* Yale University

- Promoting interactions between undergraduates and graduate students and working with the Head of College, college staff, and undergraduate students to organize social and educational activities throughout the year.

**Davidson Fellows Advisory Board Member** July, 2024 - Present  
*Davidson Institute*

- Review applications to the Davidson Institute Scholarship.

**Chair and Representative, Yale Graduate Student Assembly***Yale Graduate School of Arts & Sciences*

May 2021 - May 2024

*Yale University*

- Serving as the Astronomy department representative and Chair of the Yale Graduate School of Arts & Sciences' [Graduate Student Assembly](#).
- Leading the Assembly from May 2023 through May 2024, managing meetings 100+ graduate student representatives and steering our advocacy work in collaboration with the Yale administration.

**Local Organizing Committee Member***Various Conferences*

2023

*Yale University, University of Hawaii*

- Helped to plan and execute the TASC7/KASC14 asteroseismology workshop at the University of Hawaii in July, 2023.
- Planned and served as emcee during the Ivy+ Summit of student government leaders at Yale University in October, 2023.

**FUNDING/PROPOSAL HISTORY****Co-I, TESS General Investigator Program (PI: Joel Ong)***Asteroseismic Probes of Convective Boundary Mixing with 200-Second TESS FFIS*

August 2024

*\$70,000***Co-I, Yale TAC (PI: W. Garrett Levine)***Exoplanet Aeronomy with Keck and Palomar*

April 2024

*1 Night on Keck/NIRSPEC; 1 Night on Palomar/WIRC***Co-I, TESS General Investigator Program (PI: Joel Ong)***Magnetic Activity on Rapidly-Rotating Red Giants with 200-Second TESS FFIS*

August 2023

*\$70,000***AWARDS, FELLOWSHIPS, AND HONORS****Yale Gruber Science Fellow**

August 2020 - Present

*"Awarded to the most highly ranked applicants to Yale PhD programs in the life sciences, cosmology, and astrophysics. This Fellowship is the most prestigious award offered by Yale's Graduate School of Arts and Sciences to incoming science students in recognition of their outstanding accomplishments and exceptional promise." Includes Stipend and Tuition for the first two years of study and an additional \$9,500 award.*

**Yale Conference Travel Fund**

June 2021

**USC Order of the Laurel and the Palm**

May 2020

*"The highest honor accorded to undergraduates completing their programs of study. Less than one percent of undergraduates earning their degrees are selected as members of the Order of the Laurel and the Palm."*

**USC Provost Research Fellowships**

May 2019 - May 2020

**USC Summer Undergraduate Research Fund (SURF)**

Summers 2017 &amp; 2018

**USC Student Opportunities for Academic Research (SOAR)**

August 2016 - May 2018

**USC Warren Bennis Scholars Leadership Program**

August 2018 - May 2020

**USC Trustee Scholar (Full Tuition Remission)**

August 2016 - May 2020

**Regeneron Science Talent Search (STS) Scholar**

2017

**Davidson Fellows Laureate (\$50,000 award)**

2016