

# CALEB K. HARADA

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EDUCATION	<b>Ph.D. in Astrophysics</b>	Exp. 2026
	UNIVERSITY OF CALIFORNIA, BERKELEY	
	<i>Thesis Committee: Courtney Dressing (Chair), Eugene Chiang, Jenny Bergner</i>	
	<b>M.A. in Astrophysics</b>	2022
	UNIVERSITY OF CALIFORNIA, BERKELEY	
	<b>B.S. in Astronomy</b> w. High Honors — <i>Magna Cum Laude</i>	2020
	UNIVERSITY OF MARYLAND, COLLEGE PARK	
	<i>Honors Thesis: "Signatures of Clouds in Hot Jupiter Atmospheres: Modeled High-Resolution Emission Spectra from 3D General Circulation Models"</i>	
	<i>Thesis Advisor: Eliza Kempton</i>	
	<b>B.S. in Physics</b> — <i>Magna Cum Laude</i>	2020
RESEARCH EXPERIENCE	<b>National Science Foundation Graduate Research Fellow</b>	2020–
	Astronomy Department, University of California, Berkeley	
	<b>Graduate Student Researcher</b>	2020–
	Astronomy Department, University of California, Berkeley	
	<b>Undergraduate Student Researcher</b>	2017–2020
	Astronomy Department, University of Maryland, College Park	
	<b>National Science Foundation REU Fellow</b>	Summer 2019
AWARDS & FELLOWSHIPS	Center for Astrophysics   Harvard & Smithsonian, Cambridge, MA	
	<b>Undergraduate Student Researcher</b>	Summer 2018
	Astronomy Department, University of Michigan, Ann Arbor	
	<b>Undergraduate Student Researcher</b>	Summer 2017
	Department of Astronomy & Astrophysics, University of Chicago	
	<b>National Science Foundation Graduate Research Fellowship</b>	2020–2025
	Climatebase Fellowship, Cohort 4 ( <i>declined</i> )	2023
	UC Berkeley Outstanding Graduate Student Instructor Award	2022
	University of Maryland President's Scholarship	2016–2020
	UMD Physics Angelo Bardasis Memorial Scholarship	2018, 2019, 2020
	Maryland Space Grant Scholarship	2019, 2020
	UMD Physics Monroe Martin Undergraduate Research Award	2018, 2019
	National Science Foundation REU Program Fellowship	2019
	University of Maryland University Honors Certificate	2019

6. **Harada, C. K.**, Dressing, C. D., Kane, S. R., et al., “SPORES-HWO. II. Limits on Planetary Companions of Future High-contrast Imaging Targets from >20 Years of HIRES and HARPS Radial Velocities,” *Submitted to AAS Journals*
5. **Harada, C. K.**, Dressing, C. D., Kane, S. R., & Adami Ardestani, B., “Setting the Stage for the Search for Life with the Habitable Worlds Observatory: Properties of 164 Promising Planet Survey Targets,” 2024, *ApJS*, 272, 30
4. Desai, A., Turtelboom, E. V., **Harada, C. K.**, et al., “The TESS-Keck Survey. XVIII. A Sub-Neptune and Spurious Long-period Signal in the TOI-1751 System,” 2024, *AJ*, 167, 194
3. **Harada, C. K.**, Dressing, C. D., Alam, M. K., et al., “Stability and Detectability of Exomoons Orbiting HIP 41378 f, a Temperate Jovian Planet with an Anomalous Low Apparent Density,” 2023, *AJ*, 166, 208
2. Duck, A., **Harada, C. K.**, Harrell, J., Morris, R. A., Williams, E., Crossfield, I., Werner, M., & Deming, D., “K2, Spitzer, and TESS Transits of Four Sub-Neptune Exoplanets” 2021, *AJ*, 162, 136
1. **Harada, C. K.**, M.-R. Kempton, E., Rauscher, E., Roman, M., Malsky, I., Brinkji, M., & diTomasso, V., “Signatures of Clouds in Hot Jupiter Atmospheres: Modeled High-Resolution Emission Spectra from 3D General Circulation Models,” 2021, *ApJ*, 909, 85

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Collaborator

14. Li, Z., Kane, S. R., Blunt, S., & **Harada, C. K.**, “Radial Velocity Strategies for the Orbital Refinement of Exoplanet Direct Imaging Targets,” *Submitted to AAS Journals*
13. Sagynbayeva, S., Abbas, A., Kane, S. R., et al. (including **Harada, C. K.**), “Requirements for Joint Orbital Characterization of Cold Giants and Habitable Worlds with Habitable Worlds Observatory,” *Submitted to AAS Journals*
12. Salomé, S., Santerne, A., Bourrier, V., et al. (including **Harada, C. K.**), “A star misaligned with its cohort of long-period planets,” *Submitted to Nature Astronomy*
11. Mayo, A. W., Fortenbach, C. D., Louie, D. R., Dressing, C. D., Giacalone, S., **Harada, C. K.**, & Turtelboom, E. V., “Detection of H<sub>2</sub>O and CO<sub>2</sub> in the Atmosphere of the Hot Super-Neptune WASP-166b with JWST,” *Submitted to AAS Journals*
10. Blunt, S., Nielsen, E. L., Newton, E. R., Daylan, T., **Harada, C. K.**, Kane, S. R., Rice, M., Rodríguez Martínez, R., & Sagynbayeva, S., “Statistical Capability of the Habitable Worlds Observatory for Constraining Ozone Onset Time in Earth Analogs,” *Submitted to JATIS*
9. Dressing, C. D., Savel, A. B., Giacalone, S., et al. (including **Harada, C. K.**), “Cleaning up the TOIs I: ShARCS Follow-up Adaptive Optics Imaging of 603 TESS Targets,” *Submitted to AAS Journals*
8. Turtelboom, E. V., Dietrich, J., Dressing, C. D., & **Harada, C. K.**, “Searching for Additional Planets in TESS Multi-Planet Systems: Testing Empirical Models Based on Kepler Data,” 2025, *AJ*, in press

7. Wittenmyer, R. A., Errico, A., Holt, T. R., Horner, J., **Harada, C. K.**, Kane, S. R., & Li, Z., “Optimising Radial Velocity Detection Limits for Southern Habitable Worlds Observatory Targets,” 2025, *MNRAS*, **539**, 1
6. Kane, S. R., Li, Z., Turnbull, M. C., Dressing, C. D., & **Harada, C. K.**, “Dynamical Viability Assessment for Habitable Worlds Observatory Targets,” 2024, *AJ*, **168**, 195
5. Turtelboom, E. V., Weiss, L. M., Dressing, C. D., et al. (including **Harada, C. K.**), “The TESS-Keck Survey. XI. Mass Measurements for Four Transiting Sub-Neptunes Orbiting K-dwarf TOI 1246,” 2022, *AJ*, **163**, 293
4. Malsky, I., Rauscher, E., M.-R. Kempton, E., Roman, M., Long, D., & **Harada, C. K.**, “Modeling the High-Resolution Emission Spectra of Clear and Cloudy Nontransiting Hot Jupiters,” 2021, *ApJ*, **923**, 62
3. Roman, M. T., M.-R. Kempton, E., Rauscher, E., **Harada, C. K.**, Bean, J. L., & Stevenson, K. B., “Clouds in Three-Dimensional Models of Hot Jupiters Over a Wide Range of Temperatures I: Thermal Structures and Broadband Phase Curve Predictions,” 2021, *ApJ*, **908**, 101
2. Vissapragada, S., Knutson, H. A., Jovanovic, N., **Harada, C. K.**, Oklopčić, A., Eriksen, J., Mawet, D., Millar-Blanchaer, M. A., Tinyanont, S., & Vasisht, G., “Constraints on Metastable Helium in the Atmospheres of WASP-69b and WASP-52b with Ultra-Narrowband Photometry,” 2020, *AJ*, **159**, 278
1. Collins, K. A., Collins, K. I., Pepper, J., et al. (including **Harada, C. K.**), “The KELT Follow-Up Network and Transit False Positive Catalog: Pre-vetted False Positives for TESS,” 2018, *AJ*, **156**, 234

## SUCCESSFUL OBSERVING PROPOSALS

### Principal Investigator

#### 10-m Keck I Telescope

“Confirming an Eccentric Sub-Saturn Planet Around the Bright Nearby Star HD 219623,” Program ID 2025A\_U261 (KPF, 0.25 nights)

#### 2.4-m Automated Planet Finder (APF), Lick Observatory

“Probing Planetary System Architectures Around Neglected Nearby Stars in Preparation for HWO,” Program ID 2025A\_A009 (Levy, 3 nights)

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### Co-Investigator

#### NASA James Webb Space Telescope (JWST)

“Transmission Spectroscopy of the Super-Neptune WASP-166b,” Cycle 1 GO Program ID 2062 (NIRISS/NIRSpec, 22.8 hours; PI: Mayo)

#### 10-m Keck I Telescope

“The Obliquity of the HIP 41378 Planetary System,” Program ID 2022B\_U089 (HIRES, 18.0 hours; PI: Dressing)

#### 8.1-m Gemini-N Telescope

“Characterizing TOI 2104, one of the highest-multiplicity TESS systems,” Program ID GN-2024B-Q-123 (MAROON-X, 19.8 hours; PI: Turtelboom)

#### 3.5-m WIYN Telescope

“Characterizing TOI 2104, one of the highest-multiplicity TESS systems,” Program ID 2024B-662476 (NEID, 17.5 hours; PI: Turtelboom)

### **3-m Shane Telescope, Lick Observatory**

“Looking for Close Stellar Companions to Potential Targets for Future Searches for Life with the Habitable Worlds Observatory,” Program ID 2025A\_S025 (ShARCS, 5 nights; PI: Dressing)

“A Closer Look at the Host Stars of Transiting Planets,” Program ID 2022A\_S014 (ShARCS, 5 nights; PI: Dressing)

“A Closer Look at the Host Stars of Transiting Planets,” Program ID 2021B\_S009 (ShARCS, 8 nights; PI: Dressing)

“A Closer Look at the Host Stars of Transiting Planets,” Program ID 2021A\_S020 (ShARCS, 12 nights; PI: Dressing)

### **2.4-m Automated Planet Finder (APF), Lick Observatory**

“The APF Survey of the Habitable Worlds Observatory’s Neglected Targets,” Program ID 2025A\_A011 (Levy, 3 nights; PI: Holden)

### **1-m Nickel Telescope, Lick Observatory**

“Validating Netpune-size planets around A-type stars,” Program ID 2022B\_N011 (Direct Imaging Camera, 5 nights; PI: Giacalone)

“Validating Netpune-size planets around A-type stars,” Program 2022A\_N005 (Direct Imaging Camera, 18 nights; PI: Giacalone)

“Validating Netpune-size planets around A-type stars,” Program 2021B\_N001 (Direct Imaging Camera, 20 nights; PI: Giacalone)

## **SELECTED TALKS & POSTERS**

### **Invited Talks**

**Yale Exoplanets and Stars Seminar**, New Haven, CT, October 30, 2024

“Habitable Worlds Observatory: Precursor Science for an Exo-Earth Survey”

**MIT Kavli Institute Monday Afternoon Talk**, Cambridge, MA, October 28, 2024

“Precursor Science for the Habitable Worlds Observatory: Pathways to Planet Properties”

**HWO Splinter Session, AAS #243**, New Orleans, LA, January 10, 2024

“A Pathway to Planet Properties: Maximizing Precursor Knowledge of Potential HWO Targets”

**UC Santa Cruz Planetary Lunch Talk**, Santa Cruz, CA, October 31, 2022

“Two Tales from the Crypt: Signatures of Clouds in Hot Jupiter Ahhh!-tmospheres & Dynamical Stability of ExomoOoons”

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### **Contributed Talks**

**AAS Meeting #245**, National Harbor, MD, January 15, 2025

“SPORES-HWO: Precursor Science for the HWO Exo-Earth Survey”

**AAS Meeting #243**, New Orleans, LA, January 10, 2024

“Stability of exomoons orbiting HIP 41378 f, a temperate super-puff in a multi-planet system”

**UC Berkeley Astronomy Lunch Talk**, Berkeley, CA, October 20, 2022  
“Stability of exomoons orbiting HIP 41378 f, a temperate super-puff in a multi-planet system”

**Bay Area Exoplanet Meeting #36**, Remote/NASA Ames, March 5, 2021  
“Cloudy Hot Jupiters: Predictions of High-resolution Thermal Emission Spectra”

**University of Maryland Exoplanets Meeting**, College Park, MD, October 2, 2019  
“Atmospheric Escape in Exoplanets: Simulated 10830 Å Helium Line Absorption”

**SAO/CfA Summer REU Symposium**, Cambridge, MA, August 8, 2019  
“Atmospheric Escape in Exoplanets: Simulated 10830 Å Helium Line Absorption”

**UMD Astronomy Summer Research Talk**, College Park, MD, September 14, 2018  
“Simulated Emission Spectra of Hot Jupiters with Cloudy Atmospheres”

**UChicago Astronomy Summer Research Talk**, Chicago, IL, August 18, 2017  
“Photometry of M-Dwarf Binaries in Young Moving Groups”

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### Public Talks

**UC Berkeley Compass Project Lecture**, Berkeley, CA, October 25, 2024  
“The Search for Habitable Worlds”

**Scientist in Every Florida School**, Remote/Miami, FL, October 7, 2024  
“What’s in the Night Sky?”

**UMD Observatory Open House**, College Park, MD, December 5, 2017  
“Exploring the Cepheid Period-Apparent-Magnitude Relation in M31 with iPTF”

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### Posters

**Harada, C. K.**, Dressing, C. D., & Kane, S. R., “System Properties and Observational Reconnaissance for Exoplanet Studies with the Habitable Worlds Observatory,” Know Thy Star; Know Thy Planet Conference 2, Caltech Campus, Pasadena, CA, February 3-7, 2025

Tuchow, N., Mamajek, E., **Harada, C. K.**, & Tanner, A., “Identifying Likely HWO Targets: Report from the HWO Catalogs and Databases Task Group,” Know Thy Star; Know Thy Planet Conference 2, Caltech Campus, Pasadena, CA, February 3-7, 2025

Mayo, A. W., Fortenbach, C. D., Louie, D. R., Dressing, C. D., Giacalone, S., **Harada, C. K.**, & Turtelboom, E., “Detection of H<sub>2</sub>O and CO<sub>2</sub> in the Atmosphere of the Hot Super-Neptune WASP-166b with JWST,” Know Thy Star; Know Thy Planet Conference 2, Caltech Campus, Pasadena, CA, February 3-7, 2025

**Harada, C. K.**, Dressing, C. D., & Kane, S. R., “SPORES-HWO II. Assessing Sensitivity Limits on Planetary Architectures with a Uniform Analysis of Radial Velocities,” ([digital poster](#)), NExSci Sagan Summer Workshop, Caltech Campus, Pasadena, CA, July 22–26, 2024

**Harada, C. K.**, Dressing, C. D., & Kane, S. R., “SPORES-HWO II. Assessing Sensitivity Limits on Planetary Architectures with a Uniform Analysis of Radial Velocities,” Exoplanets 5, Leiden, the Netherlands, June 20, 2024

**Harada, C. K.**, Dressing, C. D., & Kane, S. R., “Habitable Worlds Observatory SPORES: Stellar Properties & Observational Reconnaissance for Exoplanet Studies,” Extreme Solar Systems V, Ōtautahi/Christchurch, Aotearoa/New Zealand, March 17–21, 2024

Adami Ardestani B., **Harada, C. K.**, & Dressing, C. D., “Habitable Worlds Observatory: Synthesizing Knowledge of Target Stars to Prepare for the Search for Habitable Exoplanets” ([iPoster](#)), AAS Meeting #243, New Orleans, LA, January 11, 2024

Mayo, A., **Harada, C. K.**, & Dressing, C. D., “Enriching Our View of Multiplanet Systems with High-Cadence Observations of 914 TESS Targets” ([digital poster](#)), NExSci Sagan Summer Workshop, Remote/Pasadena, CA, July 25, 2023

Hellum Bye, C., Eiden, K., Gardiner, E., **Harada, C. K.**, Isaacson, H., & Sandford, N., “Organizing in Astronomy and Academia: Tales from UCB Astronomy” ([iPoster](#)), AAS Meeting #241, Seattle, WA, January 9, 2023

**Harada, C. K.**, & Oklopčić, A., “New Insights into the Escaping Atmospheres of HAT-P-11b and WASP-69b: Simulated 10830 Å Helium Line Transmission Spectra” ([ADS abstract](#)), AAS Meeting #235, Honolulu, HI, January 6, 2020

**Harada, C. K.**, M.-R. Kempton, E., Rauscher, E., & Roman, M., “Simulated Emission Spectra of Hot Jupiters with Active Clouds from 3D GCMs,” Chesapeake Bay Area Exoplanet Meeting, College Park, MD, February 15, 2019

**Harada, C. K.**, M.-R. Kempton, E., Rauscher, E., & Roman, M., “Simulated Emission Spectra of Hot Jupiters with Active Clouds from 3D GCMs” ([ADS abstract](#)), AAS Meeting #233, Seattle, WA, January 8, 2019

Duck, A. E., **Harada, C. K.**, Harrell, J., Williams, E., Morris, R. A., Deming, D., Werner, M., & Crossfield, I., “K2 and Spitzer Joint Analysis of 4 Transiting Exoplanets” ([ADS abstract](#)), AAS Meeting #233, Seattle, WA, January 8, 2019

**Harada, C. K.**, & Warner, E., “KELT-FUN: Hunting for Hot Exoplanets at the UMD Observatory,” University of Maryland Undergraduate Research Day, College Park, MD, April 25, 2018

## PROFESSIONAL SERVICE

Task Group Liaison, NASA HWO Exoplanet Demographics Working Group, 2024–

Task Group Lead, NASA HWO Target Stars & Systems Working Group, 2024–

Astro-Q Coordinator, UC Berkeley Astronomy Department, 2023–

Judge, AAS Chambliss Poster Competition, AAS Meeting #245, January 2025

Facilitator, Berkeley MPS Scholars Undergrad Research Workshop, December 3, 2024

Panelist, Berkeley MPS Scholars NSF GRFP Workshop, October 8, 2024

Panelist, Berkeley MPS Scholars Grad Application Workshop, August 22, 2024

Judge, AAS Chambliss Poster Competition, AAS Meeting #243, January 2024

Grad Student Representative, UCB Astronomy DEI/Climate Committee, 2021–2022

Member, SRU/UAW-2865 Astronomy Organizing Committee, Fall 2022

Facilitator, UCB Queer Grads in Astronomy Info Session, March 17, 2022

Panel Chair, UCB Astronomy Prospective Grad Visit Q&A Panel, March 18, 2021

Member, UCB Astronomy Prospective Grad Visit Planning Committee, Spring 2021

Member, University of Michigan Astronomy DEI Committee, Summer 2018

## TEACHING & MENTORING

### Classroom Experience

#### **Astro-7A: Introduction to Astrophysics**, UC Berkeley (UG/majors)

Guest Lecturer, November 14, 2024  
Guest Lecturer, September 5, 2023  
Guest Lecturer, October 18, 2022  
Graduate Student Instructor, Fall 2021

#### **Astro-C12: The Planets**, UC Berkeley (UG/non-majors)

Guest Lecturer, April 1, 2025  
Head Graduate Student Instructor, Spring 2023

#### **EPS-C181: Atmospheric Physics and Dynamics**, UC Berkeley (UG/majors)

Course Reader, Fall 2022

#### **Astro-121: Introductory Astrophysics II**, University of Maryland (UG/majors)

Lab Teaching Assistant, Spring 2020  
Course Tutor, Spring 2018

#### **Astro-310: Observational Astronomy**, University of Maryland (UG/majors)

Lab Teaching Assistant, Fall 2019  
Lab Teaching Assistant, Fall 2018

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### Mentorship Programs

Mathematical & Physical Sciences (MPS) Scholars Program, UC Berkeley, 2024–

Cal-Bridge Tutoring Program, UC Berkeley, 2024–

POWER Bay Area Organizing Committee, UC Berkeley, 2022–2023

Society for Women in the Physical Sciences (SWPS), UC Berkeley, 2022

Astronomy Peer Mentoring (APM) Program, University of Maryland, 2018–2020

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### Co-advised Undergraduate Students

Bahareh Adami Ardestani (Sonoma State University undergraduate, began 2023)

Ryan Hwangbo (UC Berkeley undergraduate, began 2023)

Anmol Desai (UC Berkeley undergraduate, began 2022)

## OUTREACH

Pen Pal, Letters to a Pre-Scientist, 2024–

Guest Speaker, Scientist in Every Florida School, 2024

Mentor Coordinator, POWER Bay Area (UCB), 2022–2023

Open House Volunteer/Staff, University of Maryland Observatory, 2016–2020

Astronomy Outreach Volunteer, Maryland Day, University of Maryland, 2017–2019

Contributing Speaker, *Physics is Fun!*, University of Maryland, 2016

*Updated April 2025*