CALEB K. HARADA

Department of Astronomy
University of California, Berkeley
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EDUCATION

Ph.D. in Astrophysics — Exp. 2026
University of California, Berkeley
- *Thesis Advisor: Prof. Courtney Dressing*

M.A. in Astrophysics — 2022
University of California, Berkeley

B.S. in Astronomy (w. High Honors), *Magna Cum Laude* — 2020
University of Maryland, College Park
- *Honors Thesis Advisor: Prof. Eliza M.-R. Kempton*

B.S. in Physics, *Magna Cum Laude* — 2020
University of Maryland, College Park

EXPERIENCE

National Science Foundation (NSF) Graduate Research Fellow — 2020–
Astronomy Department, University of California, Berkeley

Graduate Student Researcher (GSR) — 2020–
Astronomy Department, University of California, Berkeley

Undergraduate Student Researcher — 2017–2020
Astronomy Department, University of Maryland, College Park

NSF REU Intern — Summer 2019
Center for Astrophysics | Harvard & Smithsonian, Cambridge, MA

Summer Student Researcher — 2018
Astronomy Department, University of Michigan, Ann Arbor

Summer Student Researcher — 2017
Department of Astronomy & Astrophysics, University of Chicago

AWARDS & FELLOWSHIPS

UC Berkeley Certificate in Teaching & Learning in Higher Education	Exp. 2026
NSF Graduate Research Fellowship (GRFP)	2020–2025
UC Berkeley Outstanding Graduate Student Instructor Award	2022
University of Maryland (UMD) 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
NSF REU Program Internship	2019
UMD University Honors Certificate	2019

REFEREED PUBLICATIONS

Significant Contributions (4 first-author)

22. **Harada, C. K.**, Dressing, C. D., Turtelboom, E. V., et al., "SPORES-HWO. II. Companion Mass Limits and Updated Planet Properties for 120 Future Exoplanet Imaging Targets from 35 Years of Precise Doppler Monitoring," *Submitted to AAS Journals*

21. Tuchow, N. W., **Harada, C. K.**, Mamajek, E. E., et al., "HWO Target Stars and Systems: A Prioritized Community List of Potential Stellar Targets for the Habitable Worlds Observatory's ExoEarth Survey," *Submitted to PASP*

20. **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

19. 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

18. **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 Anomalously Low Apparent Density," 2023, *AJ*, 166, 208

17. 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

16. **Harada, C. K.**, M.-R. Kempton, E., Rauscher, E., Roman, M., Malsky, I., Brinjikji, M., & diTomasso, V., "Signatures of Clouds in Hot Jupiter Atmospheres: Modeled High-Resolution Emission Spectra from 3D General Circulation Models," 2021, *ApJ*, 909, 85

Collaborator

15. Dressing, C. D., Savel, A. B., Giacalone, S., et al. (inc. **Harada, C. K.**), "Cleaning up the TOIs I: ShARCS Follow-up Adaptive Optics Imaging of 603 TESS Targets," *Submitted to AAS Journals*

14. Li, Z., Kane, S. R., Blunt, S., & **Harada, C. K.**, "Radial Velocity Strategies for the Orbital Refinement of Exoplanet Direct Imaging Targets," *PASP*, in press

13. Salomé, S., Santerne, A., Bourrier, V., et al. (inc. **Harada, C. K.**), "The Star HIP 41378 Potentially Misaligned With Its Cohort of Long-period Planets," *A&A*, in press

12. Sagynbayeva, S., Abbas, A., Kane, S. R., et al. (inc. **Harada, C. K.**), "Requirements for Joint Orbital Characterization of Cold Giants and Habitable Worlds with Habitable Worlds Observatory," 2025, *AJ*, in press

11. Blunt, S., Nielsen, E. L., Newton, E. R., et al. (inc. **Harada, C. K.**), "A Statistical Method for Constraining the Capability of the Habitable Worlds Observatory to Understand Ozone Onset Time in Earth Analogs," 2025, *JATIS*, 11, 4

10. Mayo, A. W., Fortenbach, C. D., Louie, D. R., Dressing, C. D., Turtelboom, E. V., Giacalone, S., & **Harada, C. K.**, "Detection of H_2O and CO_2 in the Atmosphere of the Hot Super-Neptune WASP-166b with JWST," 2025, *AJ*, 170, 50

9. Turtelboom, E. V., Dietrich, J., Dressing, C. D., & **Harada, C. K.**, "Searching for Additional Planets in TESS Multiplanet Systems: Testing Empirical Models Based on Kepler Data," 2025, *AJ*, 170, 3

8. 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

7. 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

6. Turtelboom, E. V., Weiss, L. M., Dressing, C. D., et al. (inc. **Harada, C. K.**), "The TESS-Keck Survey. XI. Mass Measurements for Four Transiting Sub-Neptunes Orbiting K-dwarf TOI 1246," 2022, *AJ*, 163, 293

5. 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

4. 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

3. 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

2. Collins, K. A., Collins, K. I., Pepper, J., et al. (inc. **Harada, C. K.**), "The KELT Follow-Up Network and Transit False Positive Catalog: Pre-vetted False Positives for TESS," 2018, *AJ*, 156, 234

Other Articles (Non-refereed)

1. Target Stars & Systems sub-Working Group of HWO Science WG Living Worlds (Mamajek, E., Hinkel, N., et al., inc. **Harada, C. K.**), "Providing Context for the ExoEarths Surveyed With Habitable Worlds Observatory: Precursor and Preparatory Science Needs for the HWO Target Star Systems (2025)," *in prep*

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 IDs 2025A_A009, 2025B_A002 (Levy, 6 nights)

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

- "Piecing Together the Puzzling TOI-880 System," Program ID 2025B_U226 (KPF, 1.0 nights; PI: Turtelboom)

- "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 IDs GN-2025B-Q-218, GN-2024B-Q-123 (MAROON-X, 39.6 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 IDs 2025A_S025, 2025B_S012 (ShARCS, 10 nights; PI: Dressing)
- "A Closer Look at the Host Stars of Transiting Planets," Program IDs 2022A_S014, 2021B_S009, 2021A_S020 (ShARCS, 25 nights; PI: Dressing)

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

- "The APF Survey of the Habitable Worlds Observatory's Neglected Targets," Program IDs 2025A_A011, 2025B_A000 (Levy, 8 nights; PI: Holden)

1-m Nickel Telescope, Lick Observatory

- "Validating Netpune-size planets around A-type stars," Program IDs 2022B_N011, 2022A_N005, 2021B_N001 (Direct Imaging Camera, 43 nights; PI: Giacalone)

SELECTED TALKS & POSTERS

Invited Talks

HWO TSS-SWG Multiplicity Group Meeting, Remote, July 16, 2025
"A Precursor RV Survey for HWO Target Stars"

Yale Exoplanets and Stars Seminar, New Haven, CT, October 30, 2024
"Habitable Worlds Observatory: Precursor Science for an Exo-Earth Survey"

MIT Kavli 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 ExomoOoOons"

Contributed Talks

HWO25 Conference, Washington, DC, July 30, 2025
"Companion mass limits for 120 potential HWO target stars from 36 years of precision Doppler RV monitoring"

Bay Area Exoplanet Meeting #48, Santa Cruz, CA, July 18, 2025
"SPORES-HWO. II. Companion mass limits for 120 future direct imaging target stars from 36 years of precise Doppler RV monitoring"

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"

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"

Posters

HWO25 Conference, Washington, DC, July 28-31, 2025
- *"Extreme Precision Radial Velocity Monitoring of HWO Target Stars: Current Status, Critical Knowledge Gaps, and Future Recommendations,"* Gupta, A. R., Polanski, A., Burt, J., Llama, J., & **Harada, C. K.**

Sagan Summer Workshop 25, Caltech, Pasadena, CA, July 21-25, 2025
- *"Companion Mass Limits for Future Exo-Earth Survey Target Stars from 30 Years of Precision Radial Velocity Monitoring"* (digital poster), **Harada, C. K.**, Dressing, C. D., & Kane, S. R.

EPRV6 Conference, Instituto de Astrofísica, Porto, Portugal, June 30-July 3, 2025
- *"Companion Mass Limits for Future Exo-Earth Survey Target Stars from 30 Years of Precision RV Monitoring,"* **Harada, C. K.**, Dressing, C. D., & Kane, S. R.

Know Thy Star; Know Thy Planet 2, Caltech, Pasadena, CA, February 3-7, 2025
- *"System Properties and Observational Reconnaissance for Exoplanet Studies with the Habitable Worlds Observatory,"* **Harada, C. K.**, Dressing, C. D., & Kane, S. R.
- *"Identifying Likely HWO Targets: Report from the HWO Catalogs and Databases Task Group,"* Tuchow, N., Mamajek, E., **Harada, C. K.**, & Tanner, A.
- *"Detection of H_2O and CO_2 in the Atmosphere of the Hot Super-Neptune WASP-166b*

with JWST," Mayo, A. W., Fortenbach, C. D., Louie, D. R., Dressing, C. D., Giacalone, S., **Harada, C. K.**, & Turtelboom, E.

Sagan Summer Workshop 24, Caltech, Pasadena, CA, July 22–26, 2024
- *"SPORES-HWO II. Assessing Sensitivity Limits on Planetary Architectures with a Uniform Analysis of Radial Velocities"* (digital poster), **Harada, C. K.**, Dressing, C. D., & Kane, S. R.

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

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

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

Sagan Summer Workshop 23, Remote/Pasadena, CA, July 25, 2023
- *"Enriching Out View of Multiplanet Systems with High-Cadence Observations of 914 TESS Targets"* (digital poster), Mayo, A., **Harada, C. K.**, & Dressing, C. D.

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

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

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

AAS Meeting #233, Seattle, WA, January 8, 2019
- *"Simulated Emission Spectra of Hot Jupiters with Active Clouds from 3D GCMs,"* **Harada, C. K.**, M.-R. Kempton, E., Rauscher, E., & Roman, M. - *"K2 and Spitzer Joint Analysis of 4 Transiting Exoplanets,"* Duck, A. E., **Harada, C. K.**, Harrell, J., Williams, E., Morris, R. A., Deming, D., Werner, M., & Crossfield, I.

UMD Undergraduate Research Day, College Park, MD, April 25, 2018
- *"The KELT Follow-up Network: Hunting for Hot Exoplanets at the UMD Observatory,"* **Harada, C. K.**, & Warner, E.

PROFESSIONAL SERVICE

Reviewer, *The Astronomical Journal*	2025–
Task Group Lead, NASA HWO Target Stars & Systems SWG	2024–2025
Task Group Liaison, NASA HWO Exoplanet Demographics SWG	2024–2025
Chambliss Poster Competition Judge, AAS Meeting #245	Jan. 2025
Chambliss Poster Competition Judge, AAS Meeting #243	Jan. 2024

DEPARTMENT SERVICE

Organizer, SPORES RV Hunters community science project (UCB)	2025–
Organizer, Astro-Q (UCB) - *Support group for local LGBTQ+ astronomers*	2023–

Member, Graduate Admissions Committee (UCB) — Spring 2025

Facilitator, MPS Scholars undergrad research workshop (UCB) — Dec. 3, 2024
- *Support program for undergrads in Math & Physical Sciences*

Grad Panelist, MPS Scholars NSF GRFP workshop (UCB) — Oct. 8, 2024

Grad Panelist, MPS Scholars grad application workshop (UCB) — Aug. 22, 2024

Grad Representative, DEI & Climate Committee (UCB) — 2021–2022

Member, SRU/UAW-2865 Astronomy Organizing Committee (UCB) — Fall 2022

Facilitator, LGBTQ+ Grads in Astronomy info session (UCB) — Mar. 17, 2022

Panel Chair, Prospective grad visit Q&A (UCB) — Mar. 18, 2021

Member, Prospective grad visit planning committee (UCB) — Spring 2021

TEACHING & MENTORING

Classroom Experience

Astro-7A: Introduction to Astrophysics, UC Berkeley (UG/majors)
Guest Lecturer, Nov. 14, 2024
Guest Lecturer, Sep. 5, 2023
Guest Lecturer, Oct. 18, 2022
Graduate Student Instructor, Fall 2021

Astro-C12: The Planets, UC Berkeley (UG/non-majors)
Guest Lecturer, Apr. 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

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

Students Advised

Christopher Chin, UC Berkeley undergrad (began 2025)

Aidan Fernandez, Mt. San Antonio Community College / USC undergrad (began 2025)

Shivani Kulkarni, UC Berkeley undergrad (began 2025)

Emerald Lin, UC Berkeley undergrad (began 2025)

Nykole Liu, UC Berkeley undergrad (began 2025)

Remy Liu, UC Berkeley undergrad (began 2025)

Abhi Nathan, UC Berkeley undergrad (began 2025)

Bahareh A. Ardestani, Sonoma State University undergrad (began 2023; co-advised)

Ryan Hwangbo, UC Berkeley undergrad (began 2023; co-advised)

Anmol Desai, UC Berkeley undergrad (began 2022; co-advised)

OUTREACH

Letters to a Pre-Scientist, Pen Pal	2024–
Scientist in Every Florida School, Guest Speaker	2024
POWER Bay Area, Mentor Coordinator (UCB)	2022-2023
University of Maryland Observatory, Open House Volunteer/Staff	2016–2020
Maryland Day, Astronomy Department Outreach Volunteer (UMD)	2017–2019
Physics is Fun!, Contributing Speaker (UMD)	2016

References available upon request.

Updated September 2025