

# AIDA BEHMARD

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## RESEARCH INTERESTS

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Exoplanets, galactic archaeology, stellar chemical abundances, stellar evolution, data-driven/machine learning techniques, Bayesian statistical methods, data mining large surveys

## APPOINTMENTS

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| <b>Flatiron Research Fellow</b><br>Center for Computational Astrophysics, Flatiron Institute, <i>New York, NY</i>                           | 2024 – present |
| <b>Kalbfleisch Postdoctoral Fellow/Research Associate</b><br>American Museum of Natural History, Dept. of Astrophysics, <i>New York, NY</i> | 2023 – present |
| <b>Graduate Research Fellow</b><br>California Institute of Technology, <i>Pasadena, CA</i>  | 2017 – 2023    |
| <b>Post-Baccalaureate Fellow</b><br>Princeton University, <i>Princeton, NJ</i>  | 2015 – 2017    |

## EDUCATION

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| <b>California Institute of Technology</b> , Pasadena, CA<br>Advisor: Prof. Heather Knutson | Sept. 2017 – June 2023 |
| <b>Ph.D.</b> Planetary Science<br><b>M.S.</b> Planetary Science                            |                        |
| <b>Yale University</b> , New Haven, CT<br><b>B.S.</b> Physics                              | Aug. 2011 – May 2015   |

## HONORS & AWARDS

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|---|-----------|
| Block Award, Aspen Center for Physics   | 2023      |
| Caltech 3-Minute Thesis Competition – 1 <sup>st</sup> Place                       | 2022      |
| NASA ExoExplorers Cohort Member   | 2022      |
| Keck Institute for Space Studies Affiliate  | 2019      |
| NSF Graduate Research Fellowship  | 2018-2021 |
| Origins of Life Initiative Grant, Harvard University                              | 2015      |
| Science, Technology, and Research Scholars (STARS II) Fellowship, Yale University | 2014      |
| George J. Schulz Fellowship for the Physical Sciences, Yale University            | 2013      |
| Yale College Dean's Undergraduate Research Fellowship                             | 2012      |

## CONFERENCE TALKS & POSTERS

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★ competitively selected

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|---|-----------|
| Know Thy Star, Know Thy Planet 2 (talk★), <i>Pasadena, CA</i> | Feb. 2025 |
| Two HoRSEs (talk★), <i>Berlin, Germany</i>                    | July 2024 |
| Cool Stars 22 (talk★), <i>San Diego, CA</i>                   | June 2024 |

|  |            |
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| Extreme Solar Systems V (poster), <i>Christchurch, New Zealand</i>               | Mar. 2024  |
| Gordon Research Conference (talk★), <i>South Hadley, MA</i>                      | June 2023  |
| Late-Stage Exoplanet Systems, Aspen Center for Physics (talk★), <i>Aspen, CO</i> | Mar. 2023  |
| Exoplanets in Our Backyard 2 (poster), <i>virtual</i>                            | Nov. 2022  |
| Exoplanet Demographics (talk★), <i>virtual</i>                                   | Nov. 2020  |
| Extreme Precision in Radial Velocity IV (talk★), <i>Grindelwald, Switzerland</i> | Mar. 2019  |
| Keck Science Meeting (talk★), <i>Pasadena, CA</i>                                | Sept. 2018 |
| Exoplanets in Southern California IV (talk), <i>Pasadena, CA</i>                 | Sept. 2018 |
| Astrochemistry: Past, Present, and Future (poster), <i>Pasadena, CA</i>          | July 2018  |
| Emerging Researchers in Exoplanet Science IV (poster), <i>Pasadena, CA</i>       | June 2018  |
| AAS Meeting #228 (poster), <i>San Diego, CA</i>                                  | June 2016  |
| AAS Meeting #223 (poster), <i>National Harbor, MD</i>                            | Jan. 2014  |
| REU Symposium, Kitt Peak National Observatory (talk), <i>Tucson, AZ</i>          | Aug. 2013  |

## INVITED SEMINARS & COLLOQUIA

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| Exoplanets & Stars Seminar, Yale University, <i>New Haven, CT</i>            | April 2025 |
| Astronomy Seminar, Universidad Diego Portales, <i>Santiago, Chile</i>        | April 2025 |
| Astronomy Seminar, Vanderbilt University, <i>Nashville, TN</i>               | Nov. 2024  |
| SDSS-V Galactic Genesis Working Group Meeting, <i>virtual</i>                | Oct. 2023  |
| Exoplanet Seminar, NASA Goddard, <i>virtual</i>                              | Jan. 2023  |
| TESS Science Talk Series, MIT, <i>Cambridge, MA</i>                          | Nov. 2022  |
| APS Seminar, CU Boulder, <i>Boulder, CO</i>                                  | Oct. 2022  |
| Planetary Science Seminar, UCLA, <i>Los Angeles, CA</i>                      | Sept. 2022 |
| Astrophysics Dept. Seminar, AMNH, <i>New York, NY</i>                        | Sept. 2022 |
| Astronomy Lunch Talk, Columbia University, <i>New York, NY</i>               | Sept. 2022 |
| ESPF Seminar Series, STScI, <i>virtual</i>                                   | Aug. 2022  |
| NASA ExoExplorers Science Series, <i>virtual</i>                             | June 2022  |
| Exoplanet Journal Club, NASA JPL, <i>Pasadena, CA</i>                        | April 2022 |
| CEHW Seminar, Penn State, <i>virtual</i>                                     | Feb. 2022  |
| EPL Astronomy Seminar, Carnegie Observatories, <i>Pasadena, CA</i>           | Feb. 2022  |
| TESS Science Team Meeting #27, <i>virtual</i>                                | Jan. 2022  |
| Exoplanet Meeting, Princeton University, <i>virtual</i>                      | Nov. 2021  |
| FLASH Seminar, UC Santa Cruz, <i>virtual</i>                                 | Dec. 2020  |
| Tea Talk, Carnegie Observatories, <i>Pasadena, CA</i>                        | Dec. 2018  |
| Origins of Life Research Symposium, Harvard University, <i>Cambridge, MA</i> | Aug. 2015  |

## TEACHING & MENTORING

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### Teaching Assistant

Held office hours, wrote problem set solutions, graded homework and exams, and substituted for instructor on multiple occasions

- Ay/Ge 117: Bayesian Statistics and Data Analysis Winter 2020, 2021, 2022
- Ay/Ge 133: Formation & Evolution of Planetary Systems Spring 2019

### Research Mentoring

- **Chris Lam** CCA Intern, April 2025 - present  
Prepping for PLATO: Data-Driven Asteroseismic Ages for Solar-like Stars Current Ph.D. student at U of Florida

- **Cinta Vidante** AMNH Kade intern, May 2024 - July 2024  
Detecting Rotationally-Modulated Flares in Young Stars with ML Current M.S. student at U of Potsdam
- **Jason Sevilla** Caltech undergrad, June 2021 - Aug. 2022  
Long-Term Lithium Abundance Signatures following Planet Engulfment Current Ph.D. student at Cornell  
Publication: ArXiv:2207.13232

## AWARDED TELESCOPE TIME

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Gemini North 8.1m Observatory: MAROON-X – 6.67 hours awarded, 2025 FT (**PI**)  
 WIYN 3.5m Observatory: NEID – 10 hours awarded, 2024B (**PI**)  
 Keck Observatory: HIRES – 1 night awarded, 2021A (**PI**<sup>†</sup>)  
 Keck Observatory: HIRES – 1 night awarded, 2020B (**PI**<sup>†</sup>)  
 Hubble Space Telescope – 2 nights awarded (Co-I), 2016

† Functionally PI, but not officially as Caltech grad students cannot PI Keck proposals

## PROFESSIONAL SERVICE

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| NSF Review Panel   | 2025                  |
| NASA Review Panel  | 2022, 2025            |
| ExoNYC Conference Organizer                                    | Jan. 2025             |
| Committee On INclusiveness in SDSS (COINS) Member              | Oct. 2024 - present   |
| Dix Caltech Planetary Science Seminar Co-Organizer             | Oct. 2020 - Jun. 2021 |
| Caltech Stars and Planets Astro-ph Co-Organizer                | Oct. 2019 - Mar. 2020 |
| Referee for <i>AAS Journals</i> , <i>MNRAS</i> , <i>Nature</i> | Sept. 2019 - present  |

## SELECTED OUTREACH & MENTORING

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**Volunteer K-2nd Science Teacher** Dec. 2017 - June 2023

- Taught weekly science lessons for K-2nd grade students at underserved Pasadena public schools through Caltech's Visiting Scientists program
- Lessons were designed to fit Pasadena Unified School District science curriculum standards
- Delivered Zoom lessons during the 2020-2021 academic year

**Caltech WAVE Program Mentor and Council Member** June 2019 - Sept. 2021

- Mentored 13 undergraduate students in the WAVE program dedicated to increasing participation of underrepresented students in STEM Ph.D. programs
- Served on the WAVE student council tasked with developing WAVE programming and close mentoring of students

**Caltech Graduate Student Council (GSC) Diversity Chair** May 2018 - Sept. 2021

- Led the GSC Diversity Committee in organizing a visit weekend for ~50 McNair scholars, DEI-related events for graduate orientations, analysis/reporting on graduate admissions DEI statistics, etc. We also created and maintain Caltech's first database of DEI resources
- Worked with students groups (BSEC, APIDA+, and Club Latino) and the Caltech Center for Inclusion and Diversity to create programming that supports minority students

### Further Activities

|                                      |                        |
|--------------------------------------|------------------------|
| NASA ExoExplorers Alumni Mentor      | Mar. 2025 - present    |
| NYC Food Not Bombs Volunteer         | Oct. 2023 - present    |
| Yale Alumni Interviewer              | Feb. 2017 - present    |
| Downtown LA Food Not Bombs Volunteer | June 2021 - July 2023  |
| Caltech GPS Buddy Program Mentor     | Sept. 2021 - June 2022 |
| Caltech Title IX Council Member      | May 2019 - Sept. 2020  |
| Skype a Scientist Instructor         | July 2020 - Aug. 2020  |
| Women Mentoring Women Program Mentor | Nov. 2017 - June 2020  |

### Outreach Talks/Workshops

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|--|------------|
| Conference Workshop for CUNY MS students                       | Jan 2025   |
| Caltech Seminar Day  | May 2022   |
| Los Altos High School Physics Club                             | Oct. 2021  |
| Women of Aeronautics and Astronautics India Chapter            | Sept. 2021 |
| FUTURE of Physics Conference                                   | Sept. 2021 |
| NorCal/Nevada American Association of Physics Teachers Meeting | April 2021 |

## PUBLICATIONS

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*1st/2nd-author* (\*\* directly supervised student, † co-first authors):

1. **A. Behmard** et. al (2025), “A Data-Driven M Dwarf Model and Detailed Abundances for  $\sim 17,000$  M Dwarfs in SDSS-V”, *The Astrophysical Journal*, 982, 13
2. S. Vissapragada, **A. Behmard**<sup>†</sup> (2025), “The Hottest Neptunes Orbit Metal-Rich Stars”, *The Astronomical Journal*, 169, 2
3. **A. Behmard**, E. Cunningham, M. Bedell, M. Ness (2023), “Elemental Abundances of *Kepler* Objects of Interest in APOGEE DR17”, *The Astronomical Journal*, 165, 178
4. **A. Behmard**, F. Dai, J. Brewer, T. Berger, A. Howard (2023), “Planet Engulfment Detections are Rare According to Observations and Stellar Modeling”, *MNRAS*, 521, 2
5. **A. Behmard**, J. Sevilla, J. Fuller (2023), “Planet Engulfment Signatures in Twin Stars”, *MNRAS*, 518, 4
6. J. Sevilla\*\*, **A. Behmard**, J. Fuller (2022), “Long-Term Lithium Abundance Signatures Following Planetary Engulfment”, *MNRAS*, 516, 3
7. **A. Behmard**, F. Dai, A. Howard (2022), “Stellar Companions To TESS Objects of Interest: A Test of Planet-Companion Alignment”, *The Astronomical Journal*, 163, 160
8. **A. Behmard**, E. Petigura, A. Howard (2019), “Data-Driven Spectroscopy of Cool Stars at High Spectral Resolution”, *The Astrophysical Journal*, 876, 68
9. **A. Behmard**, D. Graninger, E. Fayolle, J. Bergner, K. Öberg (2019), “Desorption Kinetics and Binding Energies of Small Hydrocarbons”, *The Astrophysical Journal*, 875, 73

*Nth-author:*

1. M. Greklek-McKeon et al. [including **A. Behmard**] (2025), “Tidally Heated Sub-Neptunes, Refined Planetary Compositions, and Confirmation of a Third Planet in the TOI-1266 System”, *The Astronomical Journal*, 169, 6
2. J. Galarza et al. [including **A. Behmard**] (2025), “HIP 8522: A Puzzling Young Solar Twin with the Lowest Detected Lithium Abundance”, *The Astrophysical Journal*, 983, 1
3. YL. Lu et al. [including **A. Behmard**] (2025), “Evidence of Truly Young High- $\alpha$  Dwarf Stars”, *The Astronomical Journal*, 169, 3
4. R. Rubenzahl et al. [including **A. Behmard**] (2024), “KPF Confirms a Polar Orbit for KELT-18 b”, *The Astronomical Journal*, 168, 5
5. H. Isaacson et al. [including **A. Behmard**] (2024), “The California Legacy Survey. V. Chromospheric Activity Cycles in Main-sequence Stars”, *The Astrophysical Journal Supplement Series*, 274, 2
6. D. Pidhorodetska et al. [including **A. Behmard**] (2024), “The TESS-Keck Survey. XXII. A Sub-Neptune Orbiting TOI-1437”, *The Astronomical Journal*, 168, 3
7. S. Lange et al. [including **A. Behmard**] (2024), “The TESS-Keck Survey. VII. A Super-dense Sub-Neptune Orbiting TOI-1824”, *The Astronomical Journal*, 167, 6
8. A. Polanski et al. [including **A. Behmard**] (2024), “The TESS-Keck Survey. XX. 15 New TESS Planets and a Uniform RV Analysis of All Survey Targets”, *The Astrophysical Journal Supplement Series*, 272, 2
9. B. Hord et al. [including **A. Behmard**] (2024), “Identification of the top TESS objects of interest for atmospheric characterization of transiting exoplanets with JWST”, *The Astronomical Journal*, 167, 5
10. M. Hill et al. [including **A. Behmard**] (2024), “The TESS-Keck Survey. XIX. A Warm Transiting Sub-Saturn-mass Planet and a Nontransiting Saturn-mass Planet Orbiting a Solar Analog”, *The Astronomical Journal*, 167, 4
11. R. Rubenzahl et al. [including **A. Behmard**] (2024), “The TESS-Keck Survey. XII. A Dense 1.8 R Ultra-Short-Period Planet Possibly Clinging to a High-Mean-Molecular-Weight Atmosphere After the First Gyr”, *The Astronomical Journal*, 167, 4
12. C. Beard et al. [including **A. Behmard**] (2024), “The TESS-Keck Survey. XVII. Precise Mass Measurements in a Young, High-multiplicity Transiting Planet System Using Radial Velocities and Transit Timing Variations”, *The Astronomical Journal*, 167, 2
13. J. Murphy et al. [including **A. Behmard**] (2023), “The TESS-Keck Survey. XVI. Mass Measurements for 12 Planets in Eight Systems”, *The Astronomical Journal*, 166, 4
14. S. Blunt et al. [including **A. Behmard**] (2023), “Overfitting Affects the Reliability of Radial Velocity Mass Estimates of the V1298 Tau Planets”, *The Astronomical Journal*, 166, 2

15. M. MacDougall et al. [including **A. Behmard**] (2023), “The TESS-Keck Survey. XV. Precise Properties of 108 TESS Planets and Their Host Stars”, *The Astronomical Journal*, 166, 1
16. C. Brinkman et al. [including **A. Behmard**] (2023), “TOI-561 b: A Low-density Ultra-short-period “Rocky” Planet around a Metal-poor Star”, *The Astronomical Journal*, 165, 88
17. J. Van Zandt et al. [including **A. Behmard**] (2023), “TESS-Keck Survey. XIV. Two Giant Exoplanets from the Distant Giants Survey”, *The Astronomical Journal*, 165, 60
18. F. Dai et al. [including **A. Behmard**] (2023), “TOI-1136 is a Young, Coplanar, Aligned Planetary System in a Pristine Resonant Chain”, *The Astronomical Journal*, 165, 33
19. M. El Mufti et al. [including **A. Behmard**] (2022), “TOI 560: Two Transiting Planets Orbiting a K Dwarf Validated with iSHELL, PFS, and HIRES RVs”, *The Astronomical Journal*, 165, 1
20. M. MacDougall et al. [including **A. Behmard**] (2022), “The TESS-Keck Survey. XIII. An Eccentric Hot Neptune with a Similar-Mass Outer Companion around TOI-1272”, *The Astronomical Journal*, 164, 97
21. A. Chontos et al. [including **A. Behmard**] (2022), “The TESS-Keck Survey: Science Goals and Target Selection”, *The Astronomical Journal*, 163, 297
22. E. Petigura et al. [including **A. Behmard**] (2022), “The California-Kepler Survey. X. The Radius Gap as a Function of Stellar Mass, Metallicity, and Age”, *The Astronomical Journal*, 163, 179
23. J. Winters et al. [including **A. Behmard**] (2022), “A Second Planet Transiting LTT 1445A and a Determination of the Masses of Both Worlds”, *The Astronomical Journal*, 163, 61
24. N. Heidari et al. [including **A. Behmard**] (2022), “HD 207897 b: A dense sub-Neptune transiting a nearby and bright K-type star”, *Astronomy & Astrophysics*, 658, A176
25. P. Dalba et al. [including **A. Behmard**] (2022), “The TESS-Keck Survey. VIII. Confirmation of a Transiting Giant Planet on an Eccentric 261 Day Orbit with the Automated Planet Finder Telescope”, *The Astronomical Journal*, 163, 61
26. J. Murphy et al. [including **A. Behmard**] (2021), “Another Superdense Sub-Neptune in K2-182 b and Refined Mass Measurements for K2-199 b and c”, *The Astronomical Journal*, 162, 294
27. M. MacDougall et al. [including **A. Behmard**] (2021), “The TESS-Keck Survey. VI. Two Eccentric Sub-Neptunes Orbiting HIP-97166”, *The Astronomical Journal*, 162, 265
28. A. Polanski et al. [including **A. Behmard**] (2021), “Wolf 503 b: Characterization of a Sub-Neptune Orbiting a Metal-Poor K Dwarf”, *The Astronomical Journal*, 162, 238
29. N. Scarsdale et al. [including **A. Behmard**] (2021), “TESS-Keck Survey. V. Twin Sub-Neptunes Transiting the Nearby G Star HD 63935”, *The Astronomical Journal*, 162, 215

30. M. Rice et al. [including **A. Behmard**] (2021), “SOLES I: The Spin-Orbit Alignment of K2-140 b, *The Astronomical Journal*, 162, 182
31. F. Dai et al. [including **A. Behmard**] (2021), “TKS X: Confirmation of TOI-1444b and a Comparative Analysis of the Ultra-short-period Planets with Hot Neptunes”, *The Astronomical Journal*, 162, 62
32. L. Weiss et al. [including **A. Behmard**] (2021), “The TESS-Keck Survey II: Masses of Three Sub-Neptunes Transiting the Galactic Thick-Disk Star TOI-561”, *The Astronomical Journal*, 161, 2
33. M. Kosiarek et al. [including **A. Behmard**] (2020), “Physical Parameters of the Multi-Planet Systems HD 106315 and GJ 9827”, *The Astronomical Journal*, 161, 1
34. F. Dai et al. [including **A. Behmard**] (2020), “The TESS-Keck Survey III: An aligned orbit for TOI-1726 c”, *The Astronomical Journal*, 160, 4
35. R. Cloutier et al. [including **A. Behmard**] (2020), “TOI-1235 b: a keystone super-Earth for testing radius valley emergence models around early M dwarfs”, *The Astronomical Journal*, 160, 22
36. P. Dalba et al. [including **A. Behmard**] (2020), “The TESS-Keck Survey I: A Warm Sub-Saturn-mass Planet and a Caution about Stray Light in TESS Cameras”, *The Astronomical Journal*, 159, 5
37. E. Gaidos et al. [including **A. Behmard**] (2019), “Planetesimals Around Stars with *TESS* (PAST): I. Transient Dimming of a Binary Solar Analog at the End of the Planet Accretion Era”, *MNRAS*, 488, 4465
38. M.C.Y. Lau, R. Harris, Y. Oh, M. Joo Yi, **A. Behmard**, T.C. Onstott (2018), “Taxonomic and functional compositions impacted by the quality of metatranscriptomic assemblies”, *FEMS Microbiology Ecology*, 9, 1235