# AIDA BEHMARD

Center for Computational Astrophysics · 162 5th Avenue, New York, NY 10010
abehmard@flatironinstitute.org · aidabehmard.com

## RESEARCH INTERESTS

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

## APPOINTMENTS

**Flatiron Research Fellow** 2024 – present
Center for Computational Astrophysics, Flatiron Institute, *New York, NY*

**Kalbfleisch Postdoctoral Fellow/Research Associate** 2023 – present
American Museum of Natural History, Dept. of Astrophysics, *New York, NY*

**Graduate Research Fellow** 2017 – 2023
California Institute of Technology, *Pasadena, CA*

**Post-Baccalaureate Fellow** 2015 – 2017
Princeton University, *Princeton, NJ*

## EDUCATION

**California Institute of Technology,** Pasadena, CA Sept. 2017 – June 2023
Advisor: Prof. Heather Knutson

**Ph.D.** Planetary Science
**M.S.** Planetary Science

**Yale University,** New Haven, CT Aug. 2011 – May 2015
**B.S.** Physics

## HONORS & AWARDS

| | |
|---|---|
| Block Award, Aspen Center for Physics | 2023 |
| Caltech 3-Minute Thesis Competition – $1^{st}$ 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

⋆ competitively selected

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

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

## INVITED SEMINARS & COLLOQUIA

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

## TEACHING & MENTORING

### 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
  Data-Driven Asteroseismic Ages for Solar-like Stars — Current U of Florida Ph.D. student

- **Cinta Vidante** AMNH Kade intern, May 2024 - July 2024
  Detecting Rotationally-Modulated Flares in Young Stars with ML Current U of Potsdam M.S. student

- **Jason Sevilla** Caltech undergrad, June 2021 - Aug. 2022
  Long-Term Lithium Abundance Signatures following Planet Engulfment Current Cornell Ph.D. student
  Publication: ArXiv:2207.13232

## AWARDED TELESCOPE TIME

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**†)
Keck Observatory: HIRES – 1 night awarded, 2020B (**PI**†)
Hubble Space Telescope – 2 nights awarded (Co-I), 2016

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

## PROFESSIONAL SERVICE

| | |
|---|---|
| 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 *AAS Journals, MNRAS, Nature* | Sept. 2019 - present |

## SELECTED OUTREACH & MENTORING

**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**

| | |
|---|---|
| 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

*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 ∼17,000 M Dwarfs in SDSS-V", *The Astrophysical Journal*, 982, 13
2. S. Vissapragada, **A. Behmard**† (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