Corey C. Beard
Curriculum Vitae

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EDUCATION

University of California, Irvine - PhD Astrophysics *September 2018-December 2023 (expected), Irvine, CA*
- Advisor: Professor Paul Robertson

University of California, Irvine - Masters Astrophysics *September 2018-December 2022, Irvine, CA*

University of California, Los Angeles - B.S. Physics *September 2013 - June 2017, Westwood, CA*

WORK HISTORY

Lawrence Livermore National Laboratory - Data Science Intern *June 2022 – September 2022, Irvine, CA*
- Worked with the weapon survivability group at LLNL to reproduce laser physics experiments using an advanced physics code called HYDRA
- Worked with a team of interns on a data science challenge problem, where we trained machine learning models on chemistry data to predict the effectiveness of ligands at inhibiting SARS CoV-2

University of California, Irvine - Teaching Assistant *September 2018 – June 2021, Irvine, CA*
- Led discussion sections and laboratories for a variety of physics courses at UC Irvine

Tutornerds - Tutor *May 2018 – April 2020, Yorba Linda, CA*
- Tutored math and physics at the high school and college level

University of California, Irvine - Researcher *July 2017 – August 2018, Irvine, CA*
- Between degree programs, analyzed particle physics data from the LHC as an introduction to data analysis. Working with Professor Daniel Whiteson I searched existing data for physics outside of the standard model

Osaka University, Ito Laboratory - Researcher *September 2015 – February 2016, Osaka, Japan*
- Working with Professor Tsuyohito Ito, I studied the deposition of nanoparticles on a silicon plasma. As a guest researcher I learned about the research culture of Japan and developed my physics knowledge

SKILLS & ABILITIES

Data Science
- Extensive experience with data analysis techniques such as Gaussian processes, MCMC, and Bayesian inference
- Particularly experienced at applying methods to multidimensional models with large datasets
- Implemented convolutional neural networks on chemistry data at LLNL as a part of the data science challenge problem, in addition to simpler learning methods (1D NN, Gaussian Process, Random Forest)

Coding
- Proficient in python and machine learning software (PyMC3, Keras/Tensorflow)
- Experience with version control, Github, and cluster computing using Slurm
- Experience with C++, R, Matlab, Mathematica, SQL, and PyTorch

Foreign Languages
- Conversational in Japanese

VOLUNTEERING AND OUTREACH

RadVel-Intro - Co-creator   *May 2022, Virtual*
- Ran a publicly available (https://github.com/CCBeard/Radvel_Introduction) introduction to radial velocity fitting using RadVel for collaborators and fellow astronomers

Intro-to-Astro - Research Mentor   *July 2021 – August 2021, Virtual*
- Volunteered as a research mentor for a Summer astronomy course run by the University of California, Berkeley

UCI Physics and Astronomy Blog - Lead Video Editor   *September 2018 - Present*
- Manage video-based scientific communication for the graduate student-run blog at UCI

AWARDS & ACHIEVEMENTS

Future Investigators in NASA Earth and Space Science and Technology Award   *September 2022*
- Received $100,000 in funding for a two year research project related to my thesis

TESS Guest Investigator Grant   *September 2021*
- Received a monetary award of $70,000 from NASA for my thesis project

Rose Gilbert in Memory of Maggie Gilbert Scholarship   *May 2015*
- Academic honors scholarship from UCLA

Mann Family Scholarship   *May 2014*
- Academic honors scholarship from UCLA

OPEN SOURCE PROJECTS

Data Chef   *August 2022*
- Collaborating with fellow astronomers to create a publicly available (https://github.com/rae-holcomb/DataChef) software package that generates fake datasets for purposes of simulation and testing

Shane AO Reduction Pipeline   *January 2022*
- Produced a publicly available (https://github.com/CCBeard/Shane-AO-Reduction) python codeset for the reduction of astronomical data taken using the 3m Shane Telescope at Lick Observatory
- Performs standard data reduction including dark correction, flat fielding, and sky subtraction

CONFERENCES AND PRESENTATIONS

Simultaneous Observations of Kepler Objects with TESS and NEID   *May 2023*
- Gave a 15 minute talk at the Extreme Precision Radial Velocity (EPRV 5) conference in Santa Barbara, CA

Constraining the Masses of Two Mini-Neptunes orbiting M Dwarfs using HPF   *May 2022*
- Presented a poster at the Exoplanets IV conference in Las Vegas highlighting the results of my paper analyzing both systems

WIYN Day: Simultaneous Observations of Kepler Objects with TESS and NEID   *December 2021*
- Presented early results and data analysis plan of my thesis project at UW Madison's "WIYN day," a celebration of science using data taken at WIYN observatory

ERES: AO Follow-Up for High Value HPF Targets   *May 2021*
- Presented a poster at the Emerging Researchers in Exoplanet Science (ERES) conference

Press Coverage

NEID Validates and Earth-Sized Exoplanet   *December 2022*
- [NEID blog](#) highlighting a recent publication

Dotting the i's, Crossing the t's: Follow-up of an Exo-Venus   *December 2022*
- [AAS Nova](#) blog post highlighting especially interesting science

TOI-2136b: Habitable, but not to us?   *September 2022*
- [HPF blog](#) highlighting applications of my recent publication

PUBLICATIONS

Beard, C. et al. "[GJ 3929: High-precision Photometric and Doppler Characterization of an Exo-Venus and Its Hot, Mini-Neptune-mass Companion](#)" *The Astrophysical Journal*, Volume 936, Issue 1, id.55, 19 pp. (2022)

Beard, C. et al. "[TOI-1696 and TOI-2136: Constraining the Masses of Two Mini-Neptunes with the Habitable-Zone Planet Finder](#)" *The Astronomical Journal*, Volume 163, Issue 6, id.286, 20 pp. (2022)

Stefansson, G. et al. "[A sub-Neptune sized planet transiting the M2.5-dwarf G 9-40: Validation with the Habitable-zone Planet Finder](#)" *The Astronomical Journal*, Volume 159, Issue 3, id.100, 20 pp. (2020)

Dalba, P. et al. "[The TESS-Keck Survey I: A Warm Sub-Saturn-mass Planet and a Caution about Stray Light in TESS Cameras](#)" *The Astronomical Journal*, Volume 159, Issue 5, id.241, 13 pp. (2020)

Robertson, P. et al. "[Persistent Starspot Signals on M Dwarfs: Multiwavelength Doppler Observations with the Habitable-zone Planet Finder and Keck/HIRES](#)". *The Astrophysical Journal,* Volume 897, Issue 2, id.125 (2020)

Canas, C. et al. "A Warm Jupiter Transiting an M Dwarf: A TESS Single-transit Event Confirmed with the Habitable-zone Planet Finder". *The Astronomical Journal*, Volume 160, Issue 3, id.147, 14 pp. (2020)

Dai, F. et al. "The TESS-Keck Survey. III. A Stellar Obliquity Measurement of TOI-1726". *The Astronomical Journal*, Volume 160, Issue 4, id.193, 8 pp. (2020)

Weiss, L. et al. "The TESS-Keck Survey. II. An Ultra-short-period Rocky Planet and Its Siblings Transiting the Galactic Thick-disk Star TOI-561". *The Astronomical Journal*, Volume 161, Issue 2, id.56, 19 pp. (2021)

Rubenzahl, R. et al. "The TESS-Keck Survey. IV. A Retrograde, Polar Orbit for the Ultra-low-density, Hot Super-Neptune WASP-107b". *The Astronomical Journal*, Volume 161, Issue 3, id.119, 10 pp.(2021)

Lubin, J. et al. "Stellar Activity Manifesting at a One-year Alias Explains Barnard b as a False Positive". *The Astronomical Journal*, Volume 162, Issue 2, id.61, 16 pp. (2021)

Dai, F. et al. "The TESS-Keck Survey X: Confirmation of TOI-1444b and a Comparative Analysis of the Ultra-short-period Planets with Hot Neptunes". *The Astronomical Journal*, Volume 162, Issue 2, id.62, 17 pp. (2021)

Chontos, A. et al. "The TESS-Keck Survey: Science Goals and Target Selection". eprint arXiv:2106.06156 (2021)

Kanodia, S. et al. "TOI-532b: The Habitable-zone Planet Finder confirms a Large Super Neptune in the Neptune Desert orbiting a metal-rich M-dwarf host". *The Astronomical Journal*, Volume 162, Issue 4, id.135, 13 pp. (2021)

Lubin, J. et al. "TESS-Keck Survey IX: Masses of Three Sub-Neptunes Orbiting HD 191939 and the Discovery of a Warm Jovian Plus a Distant Sub-Stellar Companion". eprint arXiv:2108.02208 (2021)

MacDougall, M. "The TESS-Keck Survey. VI. Two Eccentric Sub-Neptunes Orbiting HIP-97166". *The Astronomical Journal*, Volume 162, Issue 6, id.265, 13 pp. (2021)

Scarsdale, N. et al. "TESS-Keck Survey. V. Twin Sub-Neptunes Transiting the Nearby G Star HD 63935". *The Astronomical Journal,* Volume 162, Issue 5, id.215, 17 pp. (2021)

Canas, C. et al. "An eccentric Brown Dwarf eclipsing an M dwarf". eprint arXiv:2112.03959 (2021)

Dalba, P. et al. "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*, Volume 163, Issue 2, id.61, 17 pp. (2022)