

# JOSEPH M. AKANA MURPHY

*Updated February 1, 2021*

UC Santa Cruz, 1156 High Street, Santa Cruz, CA 95064  
Interdisciplinary Sciences Bldg 255 ♦ joseph.murphy@ucsc.edu  
 [orcid.org/0000-0001-8898-8284](https://orcid.org/0000-0001-8898-8284)  
[murphyjm.github.io](https://murphyjm.github.io)

## SCIENTIFIC INTERESTS

---

Exoplanet characterization and formation, applications of statistical modeling and machine learning

## EDUCATION

---

### University of California, Santa Cruz

*Ph.D.* in Astronomy and Astrophysics 2019 - present  
Advisor: Professor Natalie Batalha

### Stanford University

*Master of Science* in Applied and Engineering Physics 2018 - 2019  
*Bachelor of Science* in Physics 2014 - 2018  
Minor in Mathematics  
Advisors: Professor Bruce Macintosh, Dr. Ian Czekala  
Thesis: *Inferring the Veiling Spectrum of the Pre-Main Sequence Star LkCa 15 with Gaussian Processes*

## SCIENTIFIC RESEARCH

---

**Prioritizing *TESS* Targets for Atmospheric Characterization** 2019 - present  
A prioritization scheme to systematically search for the *TESS* targets that are best-suited for atmospheric follow-up with *JWST*.

**The *TESS*-Keck Survey** 2019 - present  
Observing and analysis support for the *TESS*-Keck Survey, a multi-institution collaboration with the goal of measuring the orbits and masses of 100 *TESS* planets with Keck-HIRES.

**Unveiling the Spectra of Young Stars with Gaussian Processes** 2017 - 2019  
Using Gaussian processes to model time-series spectroscopic observations of a young star, LkCa 15, we disentangle the stellar atmosphere from the spectrum of accretion, revealing time-variable, line-specific emission related to the infalling material.

## HONORS AND AWARDS

---

National Science Foundation Graduate Research Fellowship 2019 - present  
LSST Corporation Data Science Fellowship 2019 - present  
Conference Travel Grant (\$1500), 2017  
Office of Undergraduate Advising and Research, Stanford University  
Thomas J. Watson Memorial Scholarship, IBM 2014 - 2018

## PROFESSIONAL EXPERIENCE

---

### Graduate Student

Department of Astronomy and Astrophysics, University of California, Santa Cruz 2019 - present

### Research Assistant

Kavli Institute for Particle Astrophysics and Cosmology, Stanford University 2017 - 2019

### Research and Development Intern

Pathfinder Systems, Inc., Denver, CO Summer 2016

## PUBLICATIONS ([NASA ADS SEARCH RESULTS](#))

---

### Many-author Publications

6. Rubenzahl, R. *et al.* including Akana Murphy, J. M. “The *TESS*-Keck Survey IV: A Retrograde, Polar Orbit for the Ultra-Low-Density, Hot Super-Neptune WASP-107b.” [In press](#), 2021.
5. Weiss, L. *et al.* including Akana Murphy, J. M. “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*, 161, 56, 2021.
4. Kosiarek, M. *et al.* including Akana Murphy, J. M. “Physical Parameters of the Multi-Planet Systems HD 106315 and GJ 9827.” *The Astronomical Journal*, 161, 47, 2021.
3. Fei, D. *et al.*, including Akana Murphy, J. M. “The *TESS*-Keck Survey. III. A Stellar Obliquity Measurement of TOI-1726 c.” *The Astronomical Journal*, 160, 4, 2020.
2. Cloutier, R. *et al.* including Akana Murphy, J. M. “TOI-1235 b: A Keystone Super-Earth for Testing Radius Valley Emergence Models around Early M Dwarfs.” *The Astronomical Journal*, 160, 1, 2020.
1. Dalba, P. *et al.* including Akana Murphy, J. M. “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, 2020.

## ADVISING AND TEACHING EXPERIENCE

---

### Students advised

Ms. Bronwen Hardee, UCSC undergraduate	June 2020 - January 2021
Constructing a high-fidelity exoplanet mass and radius catalog.	

### Volunteer Instructor

<i>Introduction to Astronomy Research</i>	Summer 2020
(See <a href="https://github.com/howardisaacson/Intro-to-Astro-2020">github.com/howardisaacson/Intro-to-Astro-2020</a> )	

### Teaching Assistant

Astronomy 119: <i>Introduction to Scientific Computing</i> , UCSC	Spring 2020
Physics 43: <i>Electricity and Magnetism</i> , Stanford University	Spring 2019
Physics 41: <i>Mechanics</i> , Stanford University	Winter 2019
Physics 41A: <i>Mechanics</i> , Stanford University	Winter 2018

### Course Instructor

Physics 91SI: <i>Practical Computing for Scientists</i> , Stanford University	Spring 2017
---	-------------

## OBSERVING EXPERIENCE

---

10-meter Keck I telescope (HIRES) - 30 half nights	January 2020 - present
--	------------------------

## ACADEMIC PRESENTATIONS

---

### Posters

2. *Inferring the spectrum of accretion onto LkCa 15 with Gaussian Processes*, [AAS Meeting 233](#), poster 360.19, 2019.
1. *Disentangling spectra of young stars*, [AAS Meeting 233](#), poster 339.08, 2018.

## OUTREACH

---

### Invited Public Talks

<i>Piecing Together the Universe with Generative Models</i> , Astronomy on Tap - Santa Cruz	March 2020
---	------------