

# JOSEPH M. AKANA MURPHY

*Updated December 1, 2020*

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## SCIENTIFIC INTERESTS

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

## EDUCATION

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### 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

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### Prioritizing *TESS* Targets for Atmospheric Characterization

2019 - present

We develop a prioritization algorithm to systematically search for the *TESS* targets that are best-suited for atmospheric interrogation with *JWST*-NIRISS.

### The *TESS*-Keck Survey

2019 - present

Provide observing and analysis support for the *TESS*-Keck Survey, a multi-institution collaboration with the goal of measuring the orbits and masses of  $\sim 100$  *TESS* planets.

### 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

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National Science Foundation Graduate Research Fellowship

2019 - present

LSST Corporation Data Science Fellowship

2019 - present

Conference Travel Grant,

Office of Undergraduate Advising and Research, Stanford University

2017

Thomas J. Watson Memorial Scholarship, IBM

2014 - 2018

## PROFESSIONAL EXPERIENCE

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### 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](#))

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### Many-author Publications

Weiss, L. *et al.* including Murphy, J. M. A. “The *TESS*-Keck Survey II: An Ultra-Short Period Rocky Planet and its Siblings Transiting the Galactic Thick-Disk Star TOI-561.” [Submitted](#), 2020.

Kosiarek, M. *et al.* including Murphy, J. M. A. “Physical Parameters of the Multi-Planet Systems HD 106315 and GJ 9827.” [Submitted](#), 2020.

Fei, D. *et al.*, including Murphy, J. M. A. “The *TESS*-Keck Survey. III. A Stellar Obliquity Measurement of TOI-1726 c.” *The Astronomical Journal*, 160, 4, 2020.

Cloutier, R. *et al.* including Murphy, J. M. A. “TOI-1235 b: A Keystone Super-Earth for Testing Radius Valley Emergence Models around Early M Dwarfs.” *The Astronomical Journal*, 160, 1, 2020.

Dalba, P. *et al.* including Murphy, J. M. A. “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

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### Students advised

Ms. Bronwen Hardee, UCSC undergraduate	June 2020 - present
Constructing a high-fidelity catalog of the most precisely-characterized exoplanets.	

### 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
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## OBSERVING EXPERIENCE

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10-meter Keck I telescope (HIRES) - 25 half nights

## ACADEMIC PRESENTATIONS

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### Posters

<i>Inferring the spectrum of accretion onto LkCa 15 with Gaussian Processes</i> , 233rd American Astronomical Society Meeting	January 2019
<i>Disentangling spectra of young stars</i> , 231st American Astronomical Society Meeting	January 2018

## VOLUNTEER AND OUTREACH EXPERIENCE

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### Volunteer Instructor

<i>Introduction to Astronomy Research</i> ( <a href="#">GitHub link</a> )	Summer 2020
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### Invited Public Talks

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