JOSEPH M. AKANA MURPHY

Updated December 19, 2020
UC Santa Cruz, 1156 High Street, Santa Cruz, CA 95064
Interdisciplinary Sciences Bldg 255 ◇ joseph.murphy@ucsc.edu
orcid.org/0000-0001-8898-8284
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),
Office of Undergraduate Advising and Research, Stanford University 2017
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

REFEREED PUBLICATIONS (NASA ADS SEARCH RESULTS)

Many-author Publications

5. 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." *The Astronomical Journal*, accepted, 2021.

4. Kosiarek, M. *et al.* **including Murphy, J. M. A** "Physical Parameters of the Multi-Planet Systems HD 106315 and GJ 9827." *The Astronomical Journal*, accepted, 2021.

3. 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.

2. 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.

1. 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

Students advised

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

Volunteer Instructor

Introduction to Astronomy Research — Summer 2020
(github.com/howardisaacson/Intro-to-Astro-2020)

Teaching Assistant

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

Course Instructor

Physics 91SI: *Practical Computing for Scientists*, Stanford University — Spring 2017

OBSERVING EXPERIENCE

10-meter Keck I telescope (HIRES) - 27 half nights

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

Piecing Together the Universe with Generative Models, Astronomy on Tap - Santa Cruz — March 2020