

Alex Stephen Polanski

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RESEARCH POSITIONS

Percival Lowell Postdoctoral Fellow	Lowell Observatory 2024–Current
Graduate Research Assistant Advisor: Ian Crossfield	University of Kansas 2019–2024
Visiting Research Fellow Advisor: Aurora Kesseli	Caltech-IPAC 2022–2023
Undergraduate Researcher Advisor: Philip Lubin	UC Santa Barbara 2018–2019

EDUCATION

University of Kansas Ph.D. in Physics, Advisor: Ian Crossfield Dissertation: <i>Exoplanets at High Resolution: Planetary Mass Measurements and the Characterization of their Host-Stars with Optical Spectra</i> , defended with honors.	Lawrence, KS 2019–2024
University of California, Santa Barbara B.S. in Physics with a Minor in Astronomy & Planetary Science	Santa Barbara, CA 2017–2019
El Camino Community College A.S. in Physical Sciences	Gardena, CA 2014–2017

MENTORSHIP

- Jack Moreland 2026–Present
Northern Arizona University Doctoral Student. Analysis of EXPRES radial velocities for Ariel target systems.
- Heidi Chavez 2024–2025
University of Kansas undergraduate. Adapted and contributed to an open-source package for the reduction of Keck/NIRC2 adaptive optics data. Now in industry.
- Yanzhe Zhang 2021–2022
University of Kansas undergraduate. Assisted with transit and radial velocity analysis of the hot-Jupiter TOI-1107 b culminating in a poster and their co-authorship on a published work. Now a graduate student at UMass Amherst.

LEADERSHIP, OUTREACH, & SERVICE

- Founding Organizer, KU Astro Nights 2021–2024
Kick-started and continue to organize monthly telescope viewings that are open to the public and routinely gather nearly 60 attendees.
- Founder & President, Graduate Student Organization 2021–2022
Co-founder of the KU Physics & Astronomy Graduate Organization and current president.
- Chair, Physics and Astronomy Locally Organized Assembly Committee 2022
Coordinated a graduate student-led conference to showcase research by students from the University of Kansas Physics Department.
- Graduate Rep, Physics and Astronomy DEI Committee 2020–2022
One of two Graduate representatives sitting on the Department's Diversity, Equity, and Inclusion committee.
- Science Technology Engineering and Math (STEM) Ambassador 2016–2017
Conducted outreach to local public schools to encourage younger students to pursue science and engineering majors.

RESEARCH TALKS (Invited*)

- **Northern Arizona University Colloquium*** (Flagstaff, AZ) April 2026
Exoplanet Architectures through the Lens of Planet Obliquities
- On the Shoulders of Giants (Turin, IT) March 2026
Digging Deeper into Jovian-Host Systems with the Extreme Precision Spectrograph: Preliminary Survey Results
- **PLUNCH Talk*** (UC Santa Cruz, CA) February 2026
Exoplanet Architectures through the Lens of Planet Obliquities
- Dynamical Synthesis of Planetary Systems (New Haven, CT) February 2026
The Rossiter-McLaughlin Effect: Where are We Now and Where are We Going?
- **San Francisco State Astronomy Colloquium*** (San Francisco, CA) November 2025
Exoplanet Architectures through the Lens of Planet Obliquities
- **University of New Mexico Astronomy Seminar*** (Albuquerque, NM) September 2025
Exoplanet Architectures through the Lens of Planet Obliquities
- Transits to Trends (Albuquerque, NM) August 2025
An Aligned Sub-Neptune Revealed with MAROON-X
- **Caltech-IPAC Seminar*** (Pasadena, CA) June 2025
An Aligned Sub-Neptune Revealed with MAROON-X
- **Sienna College Astronomy Colloquium*** (Virtual) March 2025
To be (Aligned) or not to be (Aligned)
- Flagstaff Astronomy Symposium (Flagstaff, AZ) Sept. 2024
Rossiter-McLaughlin Measurement of a Temperate Sub-Neptune

- TESS Science Conference (*Boston, MA*) July 2024
Unveiling Exoplanet Architectures with the TESS-Keck Survey
- ExoPAG 29 (*New Orleans, LA*) Jan. 2024
Unveiling Exoplanet Architectures with the TESS-Keck Survey
- **Penn State Exoplanet Lecture*** (*State College, PA*) Nov. 2023
A Tale of Two Surveys: Leveraging Keck/HIRES for a Holistic View of Exoplanetary Systems
- **Princeton Astronomy Seminar*** (*Princeton, NJ*) Nov. 2023
A Tale of Two Surveys: Leveraging Keck/HIRES for a Holistic View of Exoplanetary Systems
- MARAC 2023 (*Atchison, KS*) Nov. 2023
TESS-Keck Survey: Mass Catalog and Data Release
- Keck Science Meeting 2023 (*Berkeley, CA*) Sept. 2023
TESS-Keck Survey: Mass Catalog and Data Release
- **UC Berkeley Exoplanet Symposium*** (*Berkeley, CA*) July 2023
TESS-Keck Survey: Mass Catalog and Data Release
- **JPL Exoplanet Lecture*** (*Pasadena, CA*) June 2023
TESS-Keck Survey: Mass Catalog and Data Release
- **UC Irvine Astrophysics Seminar*** (*UC Irvine, CA*) May 2023
A Tale of Two Surveys: Leveraging Keck/HIRES for a Holistic View of Exoplanetary Systems
- **UC Riverside Astrobiology Colloquium*** (*UC Riverside, CA*) May 2023
A Tale of Two Surveys: Leveraging Keck/HIRES for a Holistic View of Exoplanetary Systems
- 241st Meeting of the American Astronomical Society (*Seattle, WA*) Jan. 2023
Keck Abundance Project: Chemical Assay of 15 Elements in Exoplanet Host Stars
- MARAC 2022 (*U. Arkansas, AR*) Oct. 2022
Keck Abundance Project: Precise Host-Star Abundances for the JWST Era
- **UH Astrophysics Seminar*** (*Institute for Astronomy, HI*) Sept. 2022
Keck Abundance Project: Precise Host-Star Abundances for the JWST Era
- Physics and Astronomy Locally Organized Assembly (*Lawrence, KS*) Feb. 2021
Precise Exoplanet Host Star Abundances for the JWST Era
- University of Kansas Astronomy Graduate Colloquium (*Lawrence, KS*) Oct. 2020
Getting Acquainted with the Exoplanet Wolf 503b
- University of Kansas Graduate Research Seminar (*Lawrence, KS*) Oct. 2019
Analysis of Transiting Exoplanets

PUBLIC TALKS

- Invited Speaker (*Homolovi State Park, AZ*) Oct. 2025
The Importance of Maintaining our Dark Skies
- Worlds Revealed Speaker Series (*Lowell Observatory, AZ*) July 2025
How will we Find Earth 2.0?

- Astronomy Associates of Lawrence (*Virtual*) Dec. 2024
The KU Astronomical Plate Archive
- Astronomy on Tap Flagstaff (*Snowbowl, AZ*) Oct. 2024
Fantastic Worlds and How to Find Them
- Astronomy Associates of Lawrence (*Baker University, KS*) Dec. 2023
Some like it Hot: Exploring the Hottest Known Exoplanets
- Octagon Barn Star Party (*Sienna College, NY*) Nov. 2023
Exoplanets Fast and Slow
- Astronomy Associates of Lawrence (*Baker University, KS*) Feb. 2022
Understanding Exoplanets Through the Stars they Orbit
- KU Astro Nights (*Lawrence, KS*) Feb. 2022
The Pleiades: Cultural Icon of the Winter Sky

CONFERENCE POSTERS

- Ariel Open Conference (*Chilton, United Kingdom*) March 2026
Planet Confirmation in the Southwest: U.S. Contributions to the Ariel Mission
- Two HoRSEs (*Berlin, Germany*) July 2024
Atmospheres at High Resolution with the Keck Planet Finder
- Extreme Precision Radial Velocity 5 (*Santa Barbara, CA*) April 2023
TESS-Keck Survey: Mass Catalog and Data Release
- Keck Science Meeting 2021 (*UC San Diego*) Oct. 2021
Keck Abundance Project: Precise Host-Star Abundances for the JWST Era
- 236th Meeting of the American Astronomical Society (*Virtual*) June 2020
Wolf 503b: Super-Earth or Sub-Neptune?

TEACHING

- **Instructor** Lawrence High School Fall 2022 –Spring 2023
Designed and taught an astronomy course for Lawrence High School: a minority-serving school.
- **Teaching Assistant** University of Kansas Spring 2020 –Fall 2020
Astronomy 196 - Introductory Astronomy Lab
- **Head Teaching Assistant** University of Kansas Fall 2019 –Spring 2020
Physics 114 - Introductory Physics Lab
- **Teaching Assistant** El Camino Community College Fall 2015 –Spring 2017
Astronomy 12 - Observational Astronomy

AWARDS AND GRANTS

- U.S. Contributions to Ariel (NASA) (**\$326,000**) 2025
- Percival Lowell Postdoctoral Fellow (**\$20,000/yr, Discretionary**) 2024
- IPAC Visiting Graduate Fellow 2023
- Barbara J. Anthony-Twarog Outreach Award, University of Kansas 2022
- Research Honors Award, UC Santa Barbara 2018
- Undergraduate Research and Creative Activities Grant, UC Santa Barbara 2018
- Letters and Science Dean's Honor List, UC Santa Barbara 2018
- Excellence in Astronomy Award, El Camino College 2016
- International Physics Competition Silver Medal 2016
- NExSci Travel Grant (**\$1,000**) 2024
- Keck PI data Awards (**\$96,100**) 2022–2025

ACCEPTED OBSERVING PROPOSALS (PI)

- **Keck/HIRES 2026A:** *0.25 Nights* - On the Hunt for a Cold Giant in the Wolf 503 System
- **Keck/NIRC2 2025B:** *1.0 Nights* - AO Follow-up and Validation of ARIEL Targets
- **LDT/EXPRES 2025A:** *5 Nights* - Spin-Orbit Measurements of 3 Hot-Jupiters in Binary Systems
- **LDT/EXPRES 2024B:** *1.0 Night* - Spin-Orbit Measurement of a Sub-Neptune in a Bright Multi-planet System
- **LDT/EXPRES 2024B, 2025A:** *1.5 Nights* - Planet Formation on a Shoestring: Precise Mass Measurement of a Sub-Neptune in a Compact Binary System
- **LDT/EXPRES 2024B, 2025A:** *9 Nights* - The Jovian Architectures Survey (JAS): An EXPRES Route to Understanding ExoSolar Systems
- **Keck/NIRC2 2025A:** *1.5 Nights* - AO Follow-up and Validation of ARIEL Targets
- **Keck/NIRC2 2024B:** *1 Night* - AO Follow-up and Validation of ARIEL Targets
- **Keck/NIRC2 2023B:** *2 Nights* - AO Follow-up of TESS objects of interest
- **Keck/NIRC2 2023A:** *2 Nights* - AO Follow-up of TESS objects of interest
- **Keck/NIRC2 2022B:** *2 Nights* - AO Follow-up of TESS objects of interest

OBSERVING EXPERIENCE

- **Keck I (10m):** HIRES - W.M. Keck Observatory, Hawai'i. 47 nights.
- **Keck I (10m):** KPF - W.M. Keck Observatory, Hawai'i. 4 nights.
- **Keck II (10m):** NIRC2 - W.M. Keck Observatory, Hawai'i. 12 nights.
- **Palomar (200in):** PARVI - Palomar Observatory, CA. 1 night.
- **Palomar (200in):** PHARO - Palomar Observatory, CA. 3 nights.

- **Lowell Discovery Telescope (4.3m):** EXPRES - Lowell Observatory, AZ. >20 nights.
- **IRTF (3.2m):** iSHELL - NASA Infrared Telescope Facility, Hawai'i. 1 night.
- **Las Cumbres Observatory:** 0.4 Meter Telescope

FIRST AUTHOR PUBLICATIONS (100 CITATIONS)

- ¹Alex S. Polanski and C. A. Clark, “An Inventory of Resolved Stellar Companions in the Ariel Target List”, *Research Notes of the American Astronomical Society* **9**, 10.3847/2515-5172/ae18bd (2025).
- ²Alex S. Polanski, I. J. M. Crossfield, et al., “An Aligned Sub-Neptune Revealed with MAROON-X and a Tendency Toward Alignment for Small Planets”, **170**, 182, 182 (2025).
- ³Alex S. Polanski, I. J. M. Crossfield, et al., “Keck Abundance Project: Stellar Abundances for 5,000 Planet-Search Stars”, *in preparation* (2025).
- ⁴Alex S. Polanski et al., “The TESS-Keck Survey. XX. 15 New TESS Planets and a Uniform RV Analysis of All Survey Targets”, **272**, 32, 32 (2024).
- ⁵Alex S. Polanski, I. J. M. Crossfield, A. W. Howard, H. Isaacson, and M. Rice, “Chemical Abundances for 25 JWST Exoplanet Host Stars with KeckSpec”, *Research Notes of the American Astronomical Society* **6**, 155, 155 (2022).
- ⁶Alex S. Polanski, I. J. M. Crossfield, et al., “Wolf 503 b: Characterization of a Sub-Neptune Orbiting a Metal-poor K Dwarf”, **162**, 238, 238 (2021).

SELECTED CONTRIBUTING AUTHOR PUBLICATIONS (60 TOTAL PAPERS - 771 CITATIONS)

- ¹C. L. Brinkman, Alex S. Polanski, et al., “Revisiting the Relationship Between Rocky Exoplanet and Stellar Compositions”, *in preparation* (2024).
- ²J. M. Akana Murphy et al., “The TESS-Keck Survey. XVI. Mass Measurements for 12 Planets in Eight Systems”, **166**, 153, 153 (2023).
- ³J. M. Almenara et al., “TOI-4860 b, a short-period giant planet transiting an M3.5 dwarf”, *arXiv e-prints*, arXiv:2308.01454, arXiv:2308.01454 (2023).
- ⁴C. L. Brinkman et al., “TOI-561 b: A Low-density Ultra-short-period “Rocky” Planet around a Metal-poor Star”, **165**, 88, 88 (2023).
- ⁵F. Dai et al., “A Mini-Neptune Orbiting the Metal-poor K Dwarf BD+29 2654”, **166**, 49, 49 (2023).
- ⁶F. Dai et al., “TOI-1136 is a Young, Coplanar, Aligned Planetary System in a Pristine Resonant Chain”, **165**, 33, 33 (2023).
- ⁷M. El Mufti et al., “TOI 560: Two Transiting Planets Orbiting a K Dwarf Validated with iSHELL, PFS, and HIRES RVs”, **165**, 10, 10 (2023).

- ⁸N. Hejazi et al., “Elemental Abundances of the Super-Neptune WASP-107b’s Host Star Using High-resolution, Near-infrared Spectroscopy”, **949**, 79, 79 (2023).
- ⁹M. Hon et al., “A close-in giant planet escapes engulfment by its star”, **618**, 917–920 (2023).
- ¹⁰B. J. Hord et al., “Identification of the Top TESS Objects of Interest for Atmospheric Characterization of Transiting Exoplanets with JWST”, arXiv e-prints, arXiv:2308.09617, arXiv:2308.09617 (2023).
- ¹¹A. Householder et al., “Investigating the Atmospheric Mass Loss of the Kepler-105 Planets Straddling the Radius Gap”, arXiv e-prints, arXiv:2309.11494, arXiv:2309.11494 (2023).
- ¹²E. Knudstrup et al., “Radial velocity confirmation of a hot super-Neptune discovered by TESS with a warm Saturn-mass companion”, **519**, 5637–5655 (2023).
- ¹³M. G. MacDougall et al., “The TESS-Keck Survey. XV. Precise Properties of 108 TESS Planets and Their Host Stars”, **166**, 33, 33 (2023).
- ¹⁴J. Van Zandt et al., “TESS-Keck Survey. XIV. Two Giant Exoplanets from the Distant Giants Survey”, **165**, 60, 60 (2023).
- ¹⁵J. M. Almenara et al., “GJ 3090 b: one of the most favourable mini-Neptune for atmospheric characterisation”, **665**, A91, A91 (2022).
- ¹⁶J. Brande et al., “A Mirage or an Oasis? Water Vapor in the Atmosphere of the Warm Neptune TOI-674 b”, **164**, 197, 197 (2022).
- ¹⁷A. Chontos et al., “The TESS-Keck Survey: Science Goals and Target Selection”, **163**, 297, 297 (2022).
- ¹⁸I. J. M. Crossfield et al., “GJ 1252b: A Hot Terrestrial Super-Earth with No Atmosphere”, **937**, L17, L17 (2022).
- ¹⁹P. A. Dalba 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”, **163**, 61, 61 (2022).
- ²⁰S. Giacalone et al., “Validation of 13 Hot and Potentially Terrestrial TESS Planets”, **163**, 99, 99 (2022).
- ²¹S. K. Grunblatt et al., “TESS Giants Transiting Giants. II. The Hottest Jupiters Orbiting Evolved Stars”, **163**, 120, 120 (2022).
- ²²J. Lubin et al., “TESS-Keck Survey. IX. Masses of Three Sub-Neptunes Orbiting HD 191939 and the Discovery of a Warm Jovian plus a Distant Substellar Companion”, **163**, 101, 101 (2022).
- ²³M. G. MacDougall et al., “The TESS-Keck Survey. XIII. An Eccentric Hot Neptune with a Similar-mass Outer Companion around TOI-1272”, **164**, 97, 97 (2022).
- ²⁴E. V. Turtelboom et al., “The TESS-Keck Survey. XI. Mass Measurements for Four Transiting Sub-Neptunes Orbiting K Dwarf TOI-1246”, **163**, 293, 293 (2022).

²⁵M. El Mufti et al., “TOI 560 : Two Transiting Planets Orbiting a K Dwarf Validated with iSHELL, PFS and HIRES RVs”, arXiv e-prints, arXiv:2112.13448, arXiv:2112.13448 (2021).

²⁶M. G. MacDougall et al., “The TESS-Keck Survey. VI. Two Eccentric Sub-Neptunes Orbiting HIP-97166”, **162**, 265, 265 (2021).

WORKSHOPS AND SUMMER SCHOOLS

- Sagan Exoplanet Summer Workshop (*Pasadena, CA*) July 2023
- Sagan Exoplanet Summer Workshop (*Virtual*) July 2022
- Sagan Exoplanet Summer Workshop (*Virtual*) July 2020
- JWST Master Class for Proposal Writing (*Lawrence, KS*) March 2020
- Dunlap School for Astronomical Instrumentation (*Toronto, Ontario*) July 2019
- NASA Community College Aerospace Scholars Program (*Pasadena, CA*) April 2016

PROFESSIONAL PROGRAMS & SOCIETIES

- NASA ExoExplorer 2024
- AAS Member 2020 – Current
- Sigma Pi Sigma 2020 – Current
- APS Bridge Program 2019 – 2022