KYLE A. PEARSON

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RESEARCH INTERESTS

- Connecting planetary composition, origin and evolution
- Detecting and characterizing exoplanets
- Applications of machine learning for the classification of planets and stars

EDUCATION

The University of Arizona — Tucson, AZ *August 2016 - Present*
Lunar and Planetary Laboratory
Ph.D. in Planetary Science (*in progress*)

Northern Arizona University — Flagstaff, AZ *2014-2016*
M.Sc. Applied Physics Graduated with Distinction

The University of Arizona — Tucson, AZ *2010-2014*
B.S. Astronomy and Mathematics

RESEARCH EXPERIENCE

NASA Jet Propulsion Laboratory May 2019- Aug 2019
Intern

· I will be working with the Exoplanet Discovery and Science team on a statistical characterization of exoplanet atmospheres using primary transit measurements taken with the Spitzer Space telescope.

Lunar and Planetary Laboratory Jan 2019- Present
Graduate Research Assistant

· I've been conducting a search for multi-planet systems using data from the Transiting Exoplanet Survey Satellite (TESS) and have found 3 multi-planet candidates. *Publication in prep.*

· I'm collaborating on a 3 yr ground-based survey of ultra-hot transiting exoplanets in order to detect oxygen bearing species (e.g. TiO, VO) that will enable constraints on the oxygen abundance and planet's metallicity of the atmosphere (PI: Kevin Hardegree-Ullman, IPAC/CalTech).

NASA Jet Propulsion Laboratory May 2018- Aug 2018
Intern

· Helped commission and test the refurbishment of the NESSI spectrograph on the Hale Telescope. We conducted several observations of transiting exoplanets in the near infrared.

NASA Jet Propulsion Laboratory May 2017- Aug 2017
Intern

· I designed the hardware-software control system interface for an infrared spectrograph on the Hale Telescope at Palomar Observatory. The work involved developing communication between the instrument and telescope control system and designing software to perform the extraction of spectral information.

Lunar and Planetary Laboratory August 2016- Jan 2019
Graduate Teaching Assistant

- Worked with Caitlin Griffith and Tommi Koskinen to observe the atmosphere of the exoplanet XO-2 b. The observations used multi-object spectroscopy to measure the Na abundance and constrain the metallicity of the planet's atmosphere. *Publication Accepted*
- Worked with Leon Palafox to create the first machine learning algorithm using neural networks to detect transiting exoplanets in photometric data from NASA's Kepler telescope. *Publication Accepted*

NASA Jet Propulsion Laboratory May 2015- Aug 2015
Intern

- Worked on the Exoplanet Discovery and Science Team under Mark Swain and Rob Zellem to develop a data reduction pipeline for analyzing exoplanet observations from the Hubble Space telescope using Wide Field Camera 3 in stare mode.

WORK EXPERIENCE

Digital Dreams, LLC Nov 2017- Present
Co-Founder/Manager

- Founded a publishing studio for augmented and virtual reality apps through the Startup Legal Garage program at the University of California Hastings College of the Law. We contract with other companies to design educational and immersive entertainment in the era of mixed reality.

PUBLICATIONS

K. A. Pearson. The Discovery of 3 multi-planet systems from TTV measurements with TESS.*ApJ*, *in prep.*

K. A. Pearson, C. A. Griffith, R. T. Zellem, T. T. Koskinen, and G. M.Roudier. Ground-based Spectroscopy of the Exoplanet XO-2b Using a Systematic Wavelength Calibration. *AJ*, 157:21, January 2019.

M. J. Creech-Eakman, M. R. Swain, R. T. Zellem, A. Olivares, C. Salcido, L. M. Schmidt, C. A. Jurgenson, **K. Pearson**, F. Santoro, and G. Vasisht. The new NESSI: refurbishment of an NIR MOS for characterizing exoplanets using the Hale telescope. In *Ground-based and Airborne Instrumentation for Astronomy VII, volume 10702 of Society of Photo-Optical Instrumentation Engineers (SPIE)*, July 2018.

K. A. Pearson, L. Palafox, and C. A. Griffith. Searching for exoplanets using artificial intelligence. *MNRAS*, 474:478-491, February 2018.

J. D. Turner, R. M. Leiter, L. I. Biddle, **K. A. Pearson**, K. K. Hardegree-Ullman, R. M. Thompson, J. K. Teske, I. T. Cates, K. L. Cook, M. P.Berube, M. N. Nieberding, C. K. Jones, B. Raphael, S. Wallace, Z. T. Wat-son, and R. E. Johnson. Investigating the physical properties of transiting hot Jupiters with the 1.5-m Kuiper Telescope. *MNRAS*, 472:3871-3886, December 2017

J. D. Turner, **K. A. Pearson**, L. I. Biddle, B. M. Smart, R. T. Zellem,J. K. Teske, K. K. Hardegree-Ullman, C. C. Griffith, R. M. Leiter, I. T.Cates, M. N. Nieberding, C.-T. W. Smith, R. M. Thompson, R. Hofmann,M. P. Berube, C. H. Nguyen, L. C. Small, B. C. Guvenen, L. Richardson,A. McGraw, B. Raphael, B. E. Crawford, A. N. Robertson, R. Tombleson,T. M. Carleton, A. P. M. Towner, A. M. Walker-LaFollette, J. R. Hume,Z. T. Watson, C. K. Jones, M. J. Lichtenberger, S. R. Hoglund, K. L. Cook,C. A. Crossen, C. R. Jorgensen, J. M. Romine, A. R. Thompson, C. F.Villegas, A. A. Wilson, B. Sanford, J. M. Taylor, and T. N. Henz. Ground-based near-UV observations of 15 transiting exoplanets: constraints on their atmospheres and no evidence for asymmetrical transits. *MNRAS*, 459:789-819, June 2016.

D. Dragomir, B. Benneke, **K. A. Pearson**, I. J. M. Crossfield, J. Eastman,T. Barman, and L. I. Biddle. Rayleigh Scattering in the Atmosphere of the Warm Exo-Neptune GJ 3470b. ApJ, 814:102, December 2015

R. T. Zellem, C. A. Griffith, **K. A. Pearson**, J. D. Turner, G. W. Henry, M. H. Williamson, M. Ryleigh Fitzpatrick, J. K. Teske, and L. I. Biddle. XO-2b: A Hot Jupiter with a Variable Host Star That Potentially Affects Its Measured Transit Depth. *ApJ*, 810:11, September 2015.

L. I. Biddle, **K. A. Pearson**, I. J. M. Crossfield, B. J. Fulton, S. Ciceri, J. Eastman, T. Barman, A. W. Mann, G. W. Henry, A. W. Howard, M. H.Williamson, E. Sinukoff, D. Dragomir, L. Vican, L. Mancini, J. Southworth, A. Greenberg, J. D. Turner, R. Thompson, B. W. Taylor, S. E. Levine, andM. W. Webber. Warm ice giant GJ 3470b - II. Revised planetary and stellar parameters from optical to near-infrared transit photometry. *MNRAS*, 443:18101820, September 2014.

K. A. Pearson, J. D. Turner, and T. G. Sagan. Photometric observation of HAT-P-16b in the near-UV. *New Astronomy*, 27:102110, February 2014.

AWARDS

2018 - LPL Graduate Student Teaching Award

2018 - Featured in the January edition of BBC Sky at Night magazine

2017 - Graduate Teaching Excellence Award

2017 - Receipient of Startup Legal Garage program for emerging technologies

2016 - DPS Hartmann Student Travel Grant

2016 - GPSC Travel Grant

COMPUTATIONAL PROFICIENCY

Github	Over 200 contributions to open source repositories in 2018
Instructables	Created educational tutorials about arduino devices with 50,000+ views
Python	6+ years experience
C/C++, C#, HTML, SQL	Working proficiency

OBSERVATIONAL EXPERIENCE

Large Binocular Telescope / MODS 3 nights
Mt. Graham, AZ

SOAR Telescope / Goodman Spectrograph 2 nights
Cerro Tololo, Chile

Gemini Observatory / GMOS 2 nights
Manua Kea, Hi

Vatican Observatory / VATT spec 3 nights
Mt. Graham, AZ

Discovery Channel Telescope/ LBI 2 nights
Happy Jack, AZ

Mayall 4m Telescope / KOSMOS 2 nights
Kitt Peak, AZ

Kuiper 1.5m Telescope / Mont4k 34 nights
Mt. Lemmon, AZ