



PennState
Eberly College of Science



ERES VII
at Penn State

**Emerging Researchers in
Exoplanet Science VII**

August 1–2, 2022

Sponsored by:



HEISING-SIMONS
FOUNDATION

Center for Exoplanets
and Habitable Worlds

Table of Contents

Schedule of Events

Posters Presentations

Participants

Panelist Bios

Local Restaurants and Establishments



Schedule of Events

Sunday, July 31st



6:00–8:00 p.m. Badge pick-up, opening reception at Hyatt
2nd floor lobby

Monday, August 1st



8:00–9:00 a.m. Badge pick-up, poster hang-up, breakfast



9:00–9:15 a.m. Opening remarks

9:15–10:15 a.m. Detection 1—Chair: Arvind Gupta

Ben Hord “The Discovery of a Rare Planetary Companion Interior to Hot Jupiter WASP-132b”

Lizhou Sha “TESS Spots a Mini-Neptune Interior to a Hot Saturn in the TOI-2000 System”

Hannah Osborne “TOI-544b: a newly-discovered small planet inside the radius valley”

Ismael Mireles “TOI 4600b and c: Two long-period gas-giant planets orbiting an early K dwarf”



10:15–10:45 a.m. Coffee break and poster session



10:45–11:30 a.m. Stellar Activity—Chair: Shubham Kanodia

Michael Palumbo “Toward Mitigating Granulation RV Noise with GRASS: the GRanulation And Spectrum Simulator”

Maria Schutte “Temperature of Starspots from Multifilter Photometry”

Will Waalkes “Mapping Starspots on AU Mic to Complement Hubble Transmission Spectroscopy of its Young Planet”



11:30–12:15 p.m. Poster session



12:15–1:30 p.m. Lunch and poster session



1:30–2:30 p.m. Populations & Demographics 1—Chair: Matthias He

Samuel Yee “The TESS Grand Unified Hot Jupiter Survey”

Anne Dattilo “Kepler’s Greatest Hits: Revisiting Occurrence Rate Benchmarks”

Judah Van Zandt “First Results from the Distant Giants Survey: 3 New Gas Giants around Sun-like Stars”

Macy Huston “The Roman Microlensing Survey in a Galactic Context with SynthPop”



2:30–2:45 p.m. Brief break



2:45–3:30 p.m. Planet-Star Interactions—Chair: Jinglin Zhao

James Jackman “Bridging The Disconnect between UV and White-Light Flares in Low-Mass M Stars”

Zoe de Beurs “Examining Planet-Star Interactions in HAT-P-2 b to Understand Stellar Pulsations and Hot Jupiters’ Migration”

Tara Fetherolf “Stellar Variability: Star-Planet Connections”



3:30–4:15 p.m.

Coffee break and poster session



4:15–5:00 p.m.

Formation & Dynamics 1—Chair: Jiayin Dong

Brianna Ryan “Constraints on low-mass planets in the WASP-62 system from TESS transit timing variations”

Isabel Angelo “Kepler-1656b’s Eccentricity: Signature of a Gentle Giant

Xian-Yu Wang “The Aligned Orbit of WASP-148b and the statistic implications from the distribution of stellar sky-projected obliquities”

5:00–6:00 p.m.

Panel 1—Astronomy Outside Universities

Megan Bedell (Flatiron Institute)

Knicole Colon (NASA Goddard)

Néstor Espinoza (STScI)



6:00–7:00 p.m.

Dinner

Tuesday, August 2nd



8:00–9:00 a.m.

Breakfast



9:00–9:15 a.m.

Reimbursement Q&A

9:15–10:00 a.m.

Populations & Demographics 2—Chair: Macy Huston

Armaan Goyal “Generalized Peas-in-a-Pod: Extending Intra-System Mass Uniformity to Non-TTV Systems via the Gini Index”

Rafa Luque “An observational test to planet formation theories around low-mass stars”

Vighnesh Nagpal “The Impact of Bayesian Hyperpriors on the Population-Level Eccentricity Distribution of Imaged Planets”

10:00–10:45 a.m. Formation & Dynamics 2 –Chair: Garrett Levine

Drew Weisserman “Kepler-80 Revisited: How a Newly Discovered Planet Changes the Dynamical Character of the System”

Thea Faridani “Stable or Not: Constraining the Stability of Hidden Super-Short Period Planets”

Fergus Horrobin “Thermal Torques on Low Mass Planets Embedded in Protoplanetary Disks”



10:45–11:15 a.m. Coffee break and group picture

11:15 –2:15 p.m. Panel 2–Astro 2020 decadal survey

Knicole Colon (STScI)
Courtney Dressing (UC Berkeley)
Debra Fischer (NSF)



12:15–1:30 p.m. Lunch and poster session



1:30–2:30 p.m. Atmospheres–Chair: Jessica Libby-Roberts

Priyankush Ghosh “Atmospheric composition of the Super-Earth 55 Cancri e and its future observability with JWST”

Lucas Brefka “An Exploration of Constraining Chemistry in Three-Dimensional Eclipse Mapping”

Caprice Phillips “LTT 1445 Ab a Cold
Haber World or Hycean World?: An
Exploration with Twinkle”

Lakeisha Ramos-Rosado “The Hubble
Space Telescope PanCET Program: An
Extended Transmission Spectrum of the
Warm Neptune HAT-P-26b”

2:30–3:30 p.m.

Instrumentation—Chair: Shubham Kanodia

Winter Parts “Extremely Precise Radial
Velocity Measurements with Lasers”

Ryan Rubenzahl “Staring at the Sun to
Better See Exoplanets: A Solar Calibrator
for the Keck Planet Finder”

Tim Rehm “Performing Phase-Resolved
Spectroscopy on Hot Jupiters with The
Exoplanet Climate Infrared Telescope”

Sammy Hasler “The Role of Exoplanet
Photometry in Orbit-Fitting of Directly
Imaged Multi-Planet Systems”

3:30–4:00 p.m.

Coffee break and poster session

4:00–5:00 p.m.

Detection 2—Chair: Michael Palumbo

Ares Osborn “Introducing Nomads, an
observing program uncovering the origin
of remnant planets in the hot Neptunian
Desert: survey strategy and early results”

Arvind Gupta “Fishing for Planets:
Analyzing the Fisher Information Content of
EPRV Exoplanet Surveys”

Erica Thygesen “K2 & TESS Synergy:
Combining NASA’s Planet Hunters”

Emily Rickman “Precise Dynamical Masses of New Directly Imaged Companions from Combining Relative Astrometry, Radial Velocities, and Hipparcos-Gaia eDR3 Accelerations”

Posters Presentations

Natalie Allen—“ACCESS: Tentative detection of H₂O in the groundbased optical transmission spectrum of the low density hot-Saturn HATS-5b

Madyson Barber—“Transit Hunt for Young and Maturing Exoplanets (THYME) VIII: a Pleiades-age association harboring two transiting planetary systems from Kepler”

Luke Bouma—“The Youngest Planets from the Prime Kepler Mission”

Rory Bowens—“MIRAC-5: A Ground-Based Mid-IR Instrument with the Potential to Detect Ammonia in Gas Giants”

Marc Brouwers—“Prograde Spin-Up Via Gravitational Collapse”

Garett Brown—“Small Changes with Big Consequences: Solar System Stability”

Felipe Burgos—“Training Machine Learning models for exoplanet searching in radial velocity data”

Craig Corbin—“Stellar Surface Escape Velocities and Stellar Wind —Implications for Exoplanet Habitability”

Sofia Covarrubias—“N-body Interactions will be Detectable in the HR-8799 System within 5 years with VLT-GRAVITY”

Aylin Garcia Soto—“Contemporaneous Observations of H α Luminosities and Photometric Amplitudes for M dwarfs”

Mallory Harris—“TOI 904: A multiplanet system around an M

dwarf with a cold sub-Neptune”

Matthias Yang He–“De-biasing the Minimum-Mass Extrasolar Nebula: On the Diversity of Solid Disk Profiles”

Katharine Hesse–“TOI 4189 b: A long period sub-Neptune planet around a Sun-like star”

Kyle Hixenbaugh–“Doppler Shadow of Nodal Precessed XO-3b”

Shubham Kanodia–“Do short-period gas giants predominantly form around metal-rich early M dwarfs?”

Cameron Kelahan–“The Exoplanet Modeling and Analysis Center: An Online Repository for Exoplanet Related Tools”

George King–“A photoevaporative investigation of planets either side of the radius-period valley”

Garrett Levine–“Constraints on the Occurrence of Oumuamua-like Objects”

Zhixing Liu–“Investigations of Non-equal Mass and Non-equal Spacing Packing of Planetary Bodies

Emma Loudon –“Probing the Interiors of Exoplanets via Tidal Dissipation”

Jacob Luhn–“Impact of Correlated Noise on the Mass Precision of Earth-analog Planets in Radial Velocity Surveys”

Mariah MacDonald–“Characterizing the planets of K2-138 through resonances”

Raquel Martinez–“From Directly Imaged Planets to Directly Characterized Planets: A Multi-pronged Approach to Understand Planet Formation Processes in Preparation for Next Generation Facilities”

Mario Morvan–“Next Generation of Noise Correction Techniques to Improve Transit Light Curve Modelling”

Emma Page–“TOI-1994b: A Transiting Brown Dwarf Near the Planet Mass Regime”

Anusha Pai Asnodkar–“Observational constraints on the atmospheric dynamics of the inspiraling ultra-hot Jupiter WASP-12 b”

Dang Pham–“Can an exo-Oort cloud pollute white dwarfs?”

Luke Powers—“Planetary target TOI-3785b: M-Dwarf Harboring Jovian-Sized Candidate”

Brandon Radzom—“In-situ Formation Can Naturally Explain Why Hot Jupiters are Observationally Isolated”

Keighley Rockliffe—“AU Mic b, or not AU Mic b: the question of the young planet’s escaping atmosphere”

Romy Rodríguez—“A reanalysis of the composition of K2-106b, an ultrashort period super-Mercury candidate”

Sahl Rowther—“Gravitational Instabilities in Protoplanetary Discs: A Vanishing Act”

Zafar Rustamkulov—“Mapping the Limbs and Constraining the Rock-to-Ice Ratio of an Ultrahot Jupiter”

Aniket Sanghi—“Efficiently Imaging Accreting Protoplanets from Space: Reference Star Differential Imaging of the PDS 70 Planetary System with the HST/WFC3 PSF Library”

Jack Schulte—“Eight New TESS Hot Jupiters and the Search for Migration Pathways”

Cody Shakespeare—“Day ‘N’ Nite: Habitability of Tidally-Locked Planets with Sporadic Rotation”

Kendall Sullivan—“Revised Demographics of Earth- Earth-like Planets in Binary Star Systems”

Nick Tusay—“Detecting Planet-planet Occultations in Multi-planet Systems”

Eric Van Clepper—“The role of planet formation in protoplanetary disk chemistry”

Noah Vowell—“TOI-588b an inflated brown dwarf around a young, rapidly rotating A-star”

Kadin Worthen—“High-contrast imaging with the JWST MIRI MRS”

Brianna Zawadzki—“Mapping the Inner Edge and Interior Cavity of Circumbinary Protoplanetary Disk AK Sco”

Jinglin Zhao—“FIESTA II. Disentangling stellar and instrumental variability from exoplanetary Doppler shifts in Fourier domain”

Participants

Natalie Allen

Johns Hopkins University

Isabel Angelo

California State University,
Los Angeles

Madyson Barber

UNC-Chapel Hill

Anna Baum

Lehigh University

Megan Bedell

Flatiron Institute

Luke Bouma

Caltech

Rory Bowens

The University of Michigan

Lucas Brefka

Penn State

Marc Brouwers

University of Cambridge

Garett Brown

University of Toronto

Felipe Burgos

Universidad de
Concepción

Knicole Colón

NASA Goddard Space
Flight Center

Craig Corbin

Penn State

Sofia Covarrubias

California State University,
Los Angeles

Anne Dattilo

UC Santa Cruz

Zoe de Beurs

Massachusetts Institute of
Technology

Cayla Dedrick

Penn State

Jiayin Dong

Flatiron Institute

Courtney Dressing

UC Berkely

Néstor Espinoza

Space Telescope Science
Institute

Thea Faridani

California State University,
Los Angeles

Tara Fetherolf

University of California,
Riverside

Debra Fischer

National Science
Foundation

Aylin Garcia Soto

Dartmouth College

Priyankush Ghosh

National Institute of
Science Education and
Research, Bhubaneswar,
India

Christian Gilbertson

Penn State

Armaan Goyal

Indiana University

Arvind Gupta

Penn State

Mallory Harris

University of New Mexico

Sammy Hasler

Massachusetts Institute of
Technology

Matthias He

University of Notre Dame

Katharine Hesse

Massachusetts Institute of
Technology

Kyle Hixenbaugh

Indiana University

Ben Hord

University of Maryland,
College Park

Fergus Horrobin

University of Toronto

Macy Huston

Penn State

James Jackman

Arizona State University

Shubham Kanodia

Carnegie Science Earth
and Planets Laboratory

Cameron Kelahan

NASA Goddard Space
Flight Center

George King

University of Michigan

Garrett Levine

Yale University

Jessica Libby-Roberts

Penn State

Zhixing Liu

University of California,
Santa Barbara

Jacob Luhn

University of California,
Irvine

Rafa Luque

University of Chicago

Mariah MacDonald

The College of New Jersey

Raquel Martinez

University of California,
Irvine

Patrick McCreery

University of Colorado
Boulder

Ismael Mireles

University of New Mexico

Mario Morvan

California State University,
Los Angeles

Vighnesh Nagpal

University of California,
Berkeley

Ares Osborn

The University of Warwick,
UK

Hannah Osborne

University College London

Emma Page

Lehigh University

Anusha Pai Asnodkar

The Ohio State University

Michael Palumbo

Penn State

Winter Parts

Penn State

Dang Pham

University of Toronto

Caprice Phillips

The Ohio State University

Luke Powers

Penn State

Brandon Radzom

Indiana University

Lakeisha Ramos-Rosado

Johns Hopkins University

Tim Rehm

Brown University

Emily Rickman

ESA/Space Telescope
Science Institute

Keighley Rockliffe

Dartmouth College

Romy Rodríguez

The Ohio State University

Sahl Rowther

University of Warwick

Ryan Rubenzahl

California Institute of
Technology

Zafar Rustamkulov

Johns Hopkins University

Brianna Ryan

Massachusetts Institute of
Technology

Aniket Sanghi

The University of Texas at
Austin

Jack Schulte

Michigan State University

Maria Schutte

University of Oklahoma

Lizhou Sha

University of Wisconsin,
Madison

Cody Shakespeare

University of Nevada Las
Vegas

Kendall Sullivan

University of Texas at
Austin

Erica Thygesen

Michigan State University

Nick Tusay

Penn State

Judah Van Zandt

University of California,
Los Angeles

Eric Van Clepper

University of Chicago

Noah Vowell

Michigan State University

Will Waalkes

University of Colorado,
Boulder

Xian-Yu Wang

Indiana University,
Bloomington

Drew Weisserman

University of Michigan,
Ann Arbor

Kadin Worthen

Johns Hopkins University

Samuel Yee

Princeton University

Brianna Zawadzki

Penn State

Jinglin Zhao

Penn State

Panelist Bios



Megan Bedell is an associate research scientist at the Center for Computational Astrophysics in the Flatiron Institute at the Simons Foundation, where she focuses on the discovery and characterization of exoplanets using data-driven techniques. Megan is an expert in extremely precise radial velocities (EPRVs) and a member of the Terra Hunting Experiment. Megan has also put significant effort into the development of and advocacy for open-source science.

Knicole Colón is a research astrophysicist at NASA's Goddard Space Flight Center. Her work at Goddard includes scientific research and mission work. In her research, Knicole focuses on the discovery and atmospheric characterization of "extreme" exoplanets unlike those in our own solar system. In her mission work, Knicole has served in various roles for TESS, Hubble, and JWST. Knicole is the JWST deputy project scientist for exoplanet science.



Néstor Espinoza is an assistant astronomer at the Space Telescope Science Institute (STScI). His work is split between the discovery and characterization of transiting exoplanets and providing support for the JWST mission. Specifically, Néstor has focused on the development of analysis tools for time-series observations made with JWST's Near-Infrared Imager and Slitless Spectrograph (NIRISS). Néstor is also leading several TESS and JWST programs to discover new exoplanet atmospheric physics.

Courtney Dressing is an assistant professor at UC Berkeley. As an observational astronomer, she uses ground-based and space-based telescopes to discover and characterize small exoplanets and their host stars. Courtney's research addresses, How common are planetary systems? Which planets are rocky? What planets are habitable? Notably, Courtney served on the Exoplanets, Astrobiology, and the Solar System" panel for the Astro2020 Decadal Survey.



Debra Fischer is the Division Director of Astronomical Sciences at the National Science Foundation (NSF). Her research has focused extensively on the discovery of exoplanets and the relationship between stellar abundances and planetary occurrences. Debra is known for the instrument development for EPRV measurements and is principal investigator for the CHIRON spectrograph (at CTIO in Chile), the VUES spectrograph (at Mōletai Observatory in Lithuania), and EXPRES (at the Lowell Observatory DCT in Arizona).

Local Restaurants and Establishments

Food

Berkey Creamery—*legendarily good ice cream*

Cozy Thai Bistro—*a local favorite for thai food*

India Pavilion—*Indian*

Kondu—*sushi bowls and burritos*

Little Szechuan—*Chinese (Szechuan)*

Roots—*fast casual grain bowls and salads*

Sher Halal Gyro—*food truck, open late*

Lupita's—*authentic Mexican food*

Tadashi—*Japanese*

The Waffle Shop—*local breakfast favorite*

Allen Street Grill—*fancy burgers, steak and seafood, with a great view of downtown*

Federal Taphouse—*artisan pizza, burgers, and lots of beers on tap with a view*

The Corner Room—comfort food from a long-time area staple

The Tavern—“elevated American comfort food”. has an outdoor porch with a view of downtown

Mercato Mio—Italian

***Otto’s**—local favorite microbrew with artisan pizza and burgers. has an outdoor patio.

***Barrel 21**—Tapas and distillery

***Kelly’s Steak & Seafood**—Casual spot in a kitschy building for dry-aged steaks and cocktails

***Happy Valley Brewing Company**—local brewery and restaurant, the site of Astronomy on Tap State College



Cafés

Momotaro—bubble tea, rolled ice cream

Saint’s Café—some seating

Webster’s Café—vegetarian/vegan food, tables, bookstore, record store

***Café Lemont**—coffee, tea, baked goods, sandwiches



Bars

Café 210—food & drinks, indoor and outdoor seating

Doggie’s Pub—pizza & drinks, indoor & outdoor seating

Local Whiskey—Irish food & drinks

McLanahan’s Downtown Market—grocery store with self-pour beer & seating

Zeno’s—drinks & food, under the Corner Room

Champ’s Downtown—sports bar with games

Liberty Craft House—craft beers and cocktails

Antifragile Brewing Company—local nanobrewery offering beers and kombucha (no food offerings, but is next to the Pita Cabana, which is yummy)

***Maine Bay & Berry Downeast Café / Voodoo Brewing**—cozy spot for fresh seafood, pizza, and microbrews with outside seating on the grass by a stream

* indicates the location is not walking distance.