DARIA PIDHORODETSKA

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University of California, Riverside

EDUCATION

University of California, Riverside September 2020 - Present
PhD Student, Earth and Planetary Sciences Department Expected May 2025

Salisbury University August 2014 - December 2017
Bachelor of Science in Biological Sciences

RESEARCH EXPERIENCE

Earth & Planetary Sciences Department, University of California, Riverside Present
Advisors: Eddie Schwieterman, Stephen Kane
Understanding Biosignatures in the Context of Exoplanet Atmospheres

- Using photochemistry to spectral simulations of exoplanet atmospheres while analyzing the effects of stellar activity on planetary habitability.
- Assessing the detectability of spectral features with ground- and space-based telescopes to plan for future observational missions.
- Conducting exoplanet observations with the HIRES instrument at the Keck Observatory.

Planetary Systems Lab, NASA Goddard Space Flight Center March 2018 - August 2020
Advisors: Thomas Fauchez, Geronimo Villanueva, Elisa Quintana, Shawn Domagal-Goldman
Detection and Characterization of Terrestrial Exoplanets and their Atmospheres, Data + Modeling

- Simulated the feasibility of detecting and characterizing terrestrial exoplanet atmospheres with analysis via radiative transfer models.
- Used the 3-D Global Climate Model ExoCAM to constrain the parameter space of the habitable zone.
- Performed optical photometry with Kepler/K2/TESS datasets in addition to the use of planet finding and validation software for light curve creation.

Department of Biological Sciences, Salisbury University September 2016 - December 2017
Advisor: Eugene Williams
Synthesis of Lipids and Analysis of their Chirality in the Context of Astrochemistry

- Developed a methodology to study lipid chirality in the context of astrochemistry/astrobiology. Responsible for preparing, storing, and performing multiple tests such as freeze/dry cycles on a variety of lipids, as well as deciding which lipids to use to maintain the scope of the project.
- Used various teaching methods including the development of a hardbound manual and one-on-one demonstrations to train new students to continue the project upon graduation.

AWARDS AND SCHOLARSHIPS

RHG Exceptional Achievement for Science Award, NASA 2022

Dean's Distinguished Fellowship Award, University of California, Riverside 2020

GradEdge/JumpStart Summer Diversity Award, University of California, Riverside 2020

Dean's List, Salisbury University 2017

Delegate Scholarship, Maryland Higher Education Commission 2016

PUBLICATIONS

Murphy et al. inc. **Pidhorodetska, D.** 2023, AJ (https://arxiv.org/pdf/2306.16587.pdf)
The TESS-Keck Survey. XVI. Mass Measurements for 12 Planets in Eight Systems

Dai et al. inc. **Pidhorodetska, D.** 2023, AJ (https://iopscience.iop.org/article/10.3847/1538-3881/acdee8)
A Mini-Neptune Orbiting the Metal-poor K Dwarf BD+29 2654

Hon et al. inc. **Pidhorodetska, D.** 2023, Nature (https://www.nature.com/articles/s41586-023-06029-0)
A close-in giant planet escapes engulfment by its star

Zink et al. inc. **Pidhorodetska, D.** 2023, AJ (https://iopscience.iop.org/article/10.3847/1538-3881/acd24c)
Scaling K2. VI. Reduced Small-planet Occurrence in High-galactic-amplitude Stars

MacDougall et al. inc. **Pidhorodetska, D.** 2023, AJ (https://iopscience.iop.org/article/10.3847/1538-3881/acd557)
The TESS-Keck Survey. XV. Precise Properties of 108 TESS Planets and Their Host Stars

Van Zandt et al. inc. **Pidhorodetska, D.** 2023, AJ (https://iopscience.iop.org/article/10.3847/1538-3881/aca6ef/pdf)
TESS-Keck Survey. XIV. Two Giant Exoplanets from the Distant Giants Survey

MacDougall et al. inc. **Pidhorodetska, D.** 2022, AJ (https://iopscience.iop.org/article/10.3847/1538-3881/ac7ce1/pdf)
The TESS-Keck Survey. XIII. An Eccentric Hot Neptune with a Similar-mass Outer Companion around TOI-1272

Schwieterman, E.W., Olson, S.L., **Pidhorodetska, D.**, et al. 2022, ApJ (https://iopscience.iop.org/article/10.3847/1538-4357/ac8cfb/pdf)
Evaluating the Plausible Range of N_2O Biosignatures on Exo-Earths: An Integrated Biogeochemical, Photochemical, and Spectral Modeling Approach

Damiano et al. inc. **Pidhorodetska, D.** 2022, AJ (https://iopscience.iop.org/article/10.3847/1538-3881/ac9472/pdf)
A transmission spectrum of the sub-Earth planet L98-59 b in 1.1-1.7 micron

Pidhorodetska, D., Moran, S.E., Schwieterman, E.W., Fauchez, T.J., Quintana, E.V., et al. 2021, AJ (https://iopscience.iop.org/article/10.3847/1538-3881/ac1171/meta)
L 98-59: a Benchmark System of Terrestrial Planets for Future Atmospheric Characterization

Fauchez et al. inc. **Pidhorodetska, D.** 2021, PSJ (https://iopscience.iop.org/article/10.3847/PSJ/abf4df)
TRAPPIST Habitable Atmosphere Intercomparison (THAI) Workshop Report

Pidhorodetska, D., Fauchez, T.J., Villanueva, G.L., Domagal-Goldman, S.D., Kopparapu, R.K., 2020, ApJ (https://doi.org/10.3847/2041-8213/aba4a1)
Detectability of Molecular Signatures on TRAPPIST-1e through Transmission Spectroscopy Simulated for Future Space-Based Observatories

Gilbert et al. inc. **Pidhorodetska, D.** 2020, ApJ (https://doi.org/10.3847/1538-3881/aba4b2)
An Earth-sized Planet in the Habitable Zone of a Nearby Cool Star: Validation of the System

Fauchez, T.J., Villanueva, G.L., Schwieterman, E.W., Turbet, M., Arney, G., **Pidhorodetska, D.**, et al. 2019, Nature Astronomy (https://www.nature.com/articles/s41550-019-0977-7)
Sensitive Probing of Exoplanetary Oxygen via Mid Infrared Collisional Absorption

Fauchez et al. inc. **Pidhorodetska, D.** 2019, ApJ (https://doi.org/10.3847/1538-4357/ab5862)
Impact of Clouds and Hazes on the Simulated JWST Transmission Spectra of Habitable Zone Planets in the TRAPPIST-1 System

Kostov et al. inc. **Pidhorodetska, D.** 2019, AJ (https://doi.org/10.3847/1538-3881/ab2459)
The L 98-59 System: Three Transiting, Terrestrial-Sized Planets Orbiting a Nearby M-dwarf

FUNDED PROPOSALS

PI, Future Investigators in NASA Earth and Space Science and Technology (FINESST) 2022
High CO_2 Climates and Observables in the Outer Habitable Zone

Co-Investigator, HST-GO-16448 (8 Orbits) 2020
Confirming a Tentative Detection of an Atmosphere Around a Potentially Rocky Planet, PI: T. Barclay

Co-Investigator, HST-GO-959 (20 Orbits) 2019
Searching for Secondary Atmospheres in a System of Benchmark Worlds, PI: T. Barclay

INVITED TALKS

Geneva Observatory Laboratory Seminar, Geneva, Switzerland September 2019
From Climates to Biosignatures: Comparative Planetology within the TRAPPIST-1 System

Salisbury University Department of Biological Sciences Seminar September 2019
The Search for Life Beyond our Solar System: How NASA is Taking on its Greatest Challenge Yet

CONTRIBUTED TALKS AND POSTERS

AAS Winter Meeting, Virtual (Talk) January 2021
L 98-59: A Benchmark System of Terrestrial Exoplanets for Future Atmospheric Characterization

Planets 2020 Meeting, Santiago, Chile (Poster) March 2020
Detectability of Habitability Signatures on TRAPPIST-1e Simulated for Future Space-based Observatories

Exoplanets in our Backyard Meeting, Houston, Texas (Poster) February 2020
L 98-59: A Benchmark System of Terrestrial Exoplanets for Future Atmospheric Characterization

AAS Winter Meeting, Honolulu, Hawaii (Poster) January 2020
Diversity of Exoplanets with LUVOIR I: Optical and NIR

DPS/EPSC Joint Meeting, Geneva, Switzerland (Talk) September 2019
Detectability of Habitability Signatures on TRAPPIST-1e with Future Space-based Observatories

Astrobiology Science Conference, Seattle, Washington (Talk) June 2019
Detectability of Habitability Signatures on TRAPPIST-1e with Future Space-based Observatories

TRAPPIST-1 Conference, University of Liege, Belgium (Talk) June 2019
Detectability of Habitability Signatures on TRAPPIST-1e with Future Space-based Observatories

AGU Fall Meeting, Washington D.C. (Poster) December 2018
Impact of Background N_2 Pressure on the Habitability of Tidally Locked Rocky Exoplanets Around Cool Stars

Salisbury University Biochemistry Laboratory (Poster) 2017
Transformation, Expression, and Purification of Green Fluorescent Protein

Salisbury University Student Research Conference (Poster) 2016
Docosahexaenoic Acid (DHA) Inhibits Metastasis in B16 Cell Lines by Altering Membrane Molecular Order and Cell Adhesion Potentials

LEADERSHIP AND SERVICE

Communications Lead for LUVOIR Mission Concept	Present
LUVOIR Exoplanets Working Group Member	Present
Exoplanet Program (ExoPAG) Science Analysis Group 21 Member	Present
NASA Panel Service as an Executive Secretary	2019, 2020
Sellers Exoplanet Environments Collaboration (SEEC) Local Organizing Committee	2019