

# DARIA PIDHORODETSKA

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University of California, Riverside

## EDUCATION

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**University of California, Riverside**

PhD Student, Earth and Planetary Sciences Department

September 2020 - Present

Expected May 2025

**Salisbury University**

Bachelor of Science in Biological Sciences

August 2014 - December 2017

## RESEARCH EXPERIENCE

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**Earth & Planetary Sciences Department, University of California, Riverside**

Present

Advisors: Eddie Schwieterman, Stephen Kane

*Understanding Biosignatures in the Context of Exoplanet Atmospheres*

- Introducing 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.
- Training to conduct 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

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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

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- Pidhorodetska, D.**, Moran, S. E., Schwieterman, E. W., Fauchez, T. J., Quintana, E. V., et al. 2021, AJ, accepted pending corrections  
*L 98-59: a Benchmark System of Terrestrial Planets for Future Atmospheric Characterization*
- Fauchez et al. inc. **Pidhorodetska, D.** 2021, PSJ, accepted  
*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/s41550-019-0977-76>)  
*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

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- 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

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- 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

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- 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) <i>Diversity of Exoplanets with LUVOIR I: Optical and NIR</i>	January 2020
DPS/EPSC Joint Meeting, Geneva, Switzerland (Talk) <i>Detectability of Habitability Signatures on TRAPPIST-1e with Future Space-based Observatories</i>	September 2019
Astrobiology Science Conference, Seattle, Washington (Talk) <i>Detectability of Habitability Signatures on TRAPPIST-1e with Future Space-based Observatories</i>	June 2019
TRAPPIST-1 Conference, University of Liege, Belgium (Talk) <i>Detectability of Habitability Signatures on TRAPPIST-1e with Future Space-based Observatories</i>	June 2019
AGU Fall Meeting, Washington D.C. (Poster) <i>Impact of Background N<sub>2</sub> Pressure on the Habitability of Tidally Locked Rocky Exoplanets Around Cool Stars</i>	December 2018
Salisbury University Biochemistry Laboratory (Poster) <i>Transformation, Expression, and Purification of Green Fluorescent Protein</i>	2017
Salisbury University Student Research Conference (Poster) <i>Docosahexaenoic Acid (DHA) Inhibits Metastasis in B16 Cell Lines by Altering Membrane Molecular Order and Cell Adhesion Potentials</i>	2016

## LEADERSHIP AND SERVICE

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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