Shannon Dulz

225 Nieuwland Science Hall
Notre Dame, IN 46556
sdulz@nd.edu

Education

University of Notre Dame **2023 (expected)**
Ph.D., Physics
Advisor: Justin Crepp

University of Notre Dame **2022**
M.S., Physics

Missouri State University **2017**
B.S., Physics, Mathematics

Research

Graduate Research, University of Notre Dame **2017 - present**
Exoplanet population demographics simulations
High-contrast imaging of accelerating stars
Population statistics of cold giant planets

Research Intern, Missouri State University **2014 - 2017**
Transit timing analysis from Kepler data
Transit observations and analysis of Hot Jupiters

NSF REU, University of Notre Dame **2016**
Radial velocity survey simulations

NSF REU, University of Minnesota **2015**
Monte Carlo simulations and polymerization of neutron veto plastics for the SuperCDMS experiment

Awards and Fellowships

NSF Graduate Research Fellowship **2017 - 2022**

Missouri State University Presidential Scholarship **2013 - 2017**

Deans List, Missouri State University **2013 - 2017**

Departmental Undergraduate Scholarships **2013 - 2017**

Service

ND Graduate Physics Society Executive Board **2021 - 2022**

Department Diversity Committee **2019 - 2021**

Volunteer with ExP@ND demo team **2017 - 2019**
Our Universe Revealed series:"Spooky Science Demo Show", Oct 24, 2017
Our Universe Revealed series: "Expect the Unexpected", May 15, 2018
Halloween Spooktacular demo show at Elkhart ETHOS center, Oct 26, 2019

Volunteer for Observatory Open House events **2018**
Our Universe Revealed series: "More Summertime Stargazing", Aug 17, 2018

Teaching Experience

Teaching Practicum (Guest lectures) **2021 - present**
Elementary Cosmology: "The Emergence of Complex Life", Dec 7, 2021
Physics for Life Sciences II: "Images", Mar 30, 2022
Physics for Life Sciences I: "Potential Energy", October 3, 2022

Scientific Writing for REU students **2022**
Instructor

Teaching Assistant **2017 - 2019**
Physics Research Writing Consultant, 2022-2023 **&2022 - present**
Engineering Physics II Tutorial, Instructor, Spring 2023
Scientific Writing for Physicists, Support, Spring 2023
Physics of Astrophysics, Grading, Fall 2022
Junior Seminar, Writing Support, Fall 2022
Demonstrations Support, 2022-2023
Physics B Lab, Lab & Grading, Spring 2019
Engineering Physics II Lab, Lab & Grading, Spring 2019
Physics A Lab, Lab and Grading, Fall 2018
Descriptive Astronomy, Grading, Fall 2018
Elementary Cosmology, Grading, Fall 2018
Science Literacy, Grading & Help Sessions, Spring 2018
Energy and Society, Grading & Help Sessions, Fall 2017

Publications

Dulz, S., Crepp, J., et al. "The TRENDS High-Contrast Imaging Survey. IX. The Occurrence Rate of Giant Planets around K-Dwarfs", *in prep*

Bowler, B., Endl, M., Cochran, W., et al. "The McDonald Accelerating Stars Survey (MASS): Discovery of a Long-period Substellar Companion Orbiting the Old Solar Analog HD 47127", 2021, The Astrophysical Journal Letters, Volume 913, Issue 2, id.L26, doi:10.3847/2041-8213/abfec8

Stark, C., Dressing, C., Dulz, S., et al. "Toward Complete Characterization: Prospects for Directly Imaging Transiting Exoplanets", 2020, The Astronomical Journal, Volume 159, Issue 6, id.286, doi:10.3847/1538-3881/ab8f26

Dulz, S., Plavchan, P., Crepp, J., et al. "Joint Radial Velocity and Direct Imaging Planet Yield Calculations: I. Self-consistent Planet Populations", 2020, The Astrophysical Journal, Volume 893, Issue 2, id.122, doi:10.3847/1538-4357/ab7b73

Gaudi, B. S., Seager, S., Mennesson, B., et al. "The Habitable Exoplanet Observatory (HabEx) Mission Concept Study Final Report", 2020, arXiv:2001.06683

Presentations

"Direct Imaging of Substellar Companions to Accelerating Stars", Dulz, S., Great Lakes Exoplanet Area Meeting, November 2022

"Cold Exoplanets: Ground-based Direct Imaging and Population Studies Planning for Future Space Missions", Dulz, S., Missouri State University departmental seminar, March 2021 (Invited)

"Self-Consistent Planet Populations for Direct Imaging Space Missions", Dulz, S., Exoplanet Demographics (NExSci, IPAC/Caltech), November 2020

"Planet Population Demographics for Radial Velocity and Direct Imaging Yield Calculations", Dulz, S., Plavchan, P., Crepp, J., Stark, C., Morgan, R., Kane, S., Newman, P., Matzko, W., Mulders, G., American Astronomical Society meeting, June 2019

"Exoplanet Demographics for EPRV and Direct Imaging Yield Calculations" (poster), Dulz, S., Plavchan, P., Crepp, J., Newman, P., Stark, C., Morgan, R., Kane, S., American Astronomical Society meeting, January 2019

"Boosting the Yield of Direct Imaging Space Missions with EPRV Measurements" (poster), Dulz, S., Crepp, J., Plavchan, R., Newman, P., Stark, C., Sagan Exoplanet Workshop, July 2018

"Efficiency of the WFIRST Coronagraphic Survey based on Precursory Radial Velocity Measurements" (poster), Dulz, S., Crepp, J., Plavchan, R., Newman, P., Stark, C., American Astronomical Society meeting, January 2018

"Exoplanet Transit Timing Variations with Kepler Spacecraft Data" (poster), Dulz, S., Reed, M., Missouri State University College of Natural Sciences Undergraduate Research Day, April 2017

"Transit Timing Variation and Exoplanet Demographics Studies" Dulz, S., Missouri Space Grant Consortium Meeting, April 2017

"Transit Timing Variation analysis with Kepler light curves of KOI 227 and Kepler 93b" (poster), Dulz, S., Reed, M., American Astronomical Society, January 2017

"Analyzing Kepler Lightcurves of Exoplanets" (poster), Dulz, S., Reed, M., American Astronomical Society Division of Planetary Sciences meeting, October 2016

"Statistical Simulations of a Radial Velocity Search for Exoplanets: Implications for NASA's WFIRST Mission" Dulz, S., University of Notre Dame Physics REU Program, August 2016

"Observations of Exoplanets with the Kepler Spacecraft" (poster), Dulz, S., Reed, M., Missouri State University College of Natural Sciences Undergraduate Research Day, April 2016

"Observations of Exoplanets with the Kepler Spacecraft", Dulz, S., Reed, M., Mid-American Regional Astrophysics Conference, April 2016

"Observations of Transiting Hot Jupiter Exoplanets" (poster), Dulz, S., Reed, M., University of Nebraska-Lincoln Conference for Undergraduate Women in the Physical Sciences, October 2015

"Monte Carlo Simulations and Polymerization of Neutron Veto Plastics for the SuperCDMS Experiment", Dulz, S., University of Minnesota Physics REU Program, August 2015

"Monte Carlo Simulations and Polymerization of Neutron Veto Plastics for SuperCDMS Experiment" (poster), Dulz, S., University of Minnesota Summer Undergraduate Research Expo, August 2015

"Observations to constrain the albedo of a Hot Jupiter", Dulz, S., Reed, M., Mastroianni, K., 2015 Mid-American Regional Astrophysics Conference, April 2015 & Missouri Space Grant Consortium Meeting, April 2015

"Observations to Constraint the Albedo for Hot Jupiter Exoplanet Tres-4b" (poster), Dulz, S., Reed, M., APS Conference for Undergraduate Women in Physics, January 2015

"Observations of Earth-like Exoplanets" (poster), Dulz, S., Reed, M., Mastroianni, K., Winans, A., Missouri Space Grant Consortium Meeting, April 2014 & Missouri State University College of Natural Sciences Undergraduate Research Day, May 2014

References

Justin R. Crepp
Associate Professor at the University of Notre Dame
jcrepp@nd.edu

Peter P. Plavchan
Associate Professor at George Mason University
pplavcha@gmu.edu

Christopher C. Stark
JWST Deputy Observatory Project Scientist at NASA GSFC
christopher.c.stark@nasa.gov