Dany Waller

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Research Interests

Planetary Geophysics

Mathematical Physics

Education

Applied Physics (M.S.)
Johns Hopkins University
2020-2022

Mathematics (B.S.)
University of Kentucky
2014-2019

Physics (B.A.)
University of Kentucky
2014-2019

Awards

APS 5 Sigma Physicist
2020

UK Physics Advocacy Award
2019

Omicron Delta Kappa Student Impact Award
2019

Outstanding Senior on "UK at the Half"
2019

Sigma Pi Sigma Chapter Research Award
2019

UK Oswald Research & Creativity Competition
2018

UK High Scholarship in Physics
2017, 2018

Profile

- I am a graduate student in Applied Physics at Johns Hopkins University, with a background in planetary science.
- I enjoy participating in interdisciplinary science research and fostering an inclusive scientific community.

Work history

September 2020 – Present

Graduate Research Assistant
JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY (APL)

Under the supervision of Dr. Joshua Cahill, I study lunar geomorphology and space weathering effects in the near- and far-ultraviolet spectrum. My responsibilities include:

- Mapping spectral changes as a function of time and location using Lunar Reconnaisance Orbiter's LAMP instrument and LROC data.
- Understanding the relationship between local magnetic anomalies and spectral properties through the effects of space weathering.
- Expanding our current view of lunar swirls and their importance in future lunar exploration.

August 2020 – Present

Scientific Analyst II
SCIENCE SYSTEMS & APPLICATIONS, INC

I provide programming support for the Hazard Detection Lidar (HDL) system at NASA's Goddard Space Flight Center (GSFC). HDL is part of NASA's precision landing technology suite, Safe and Precise Landing – Integrated Capabilities Evolution (SPLICE), which will enable safer and more accurate landings. My responsibilities include:

- Optimizing lidar simulations and digital elevation map (DEM) visualizations in Octave and MATLAB.
- Creating and verifying new algorithms for image and data analysis, including hazard identification and instrument performance.
- Understanding and advising customers on hazard classifications for future lunar landings.

May 2019 – August 2020

Planetarium Director + Earth & Space Science Program Coordinator
THE LIVING ARTS & SCIENCE CENTER

I managed the Farish Planetarium and the LASC Earth & Space Science program, and I reported to the executive director Lori Halligan. My responsibilities included:

- Hosting weekly public planetarium shows.
- Coordinating daily field trips and visitor groups to the planetarium.
- Creating new planetarium content, workshops, and lesson plans while ensuring scientific accuracy in our products.

Publications

ORCiD

Google Scholar

ResearchGate

Highlighted Coursework

Planetary Science

Computational Physics

Numerical Analysis

Professional Societies

American Geophysical Union

American Physical Society

Sigma Pi Sigma (ΣΠΣ)

Volunteer Work

AGU Science Policy Advocate

APS Science Policy Advocate

NASA Solar System Ambassador

June 2018 – May 2019

Junior Software Engineer
UNIVERSITY OF KENTUCKY CENTER FOR MUSCLE BIOLOGY

Under the supervision of Dr. Charlotte Peterson and Dr. Kenneth Campbell, I managed the CMB's MyoVision and FiberVision software. My responsibilities included:

- Maintaining servers and computers in the CMB.
- Designing and implementing software updates based on user feedback.
- Developing a robust machine learning algorithm to improve image analysis.
- Writing documentation and distributing literature for CMB partners.

February 2017 – May 2019

Planetary Science Research Assistant
UNIVERSITY OF KENTUCKY DEPARTMENT OF GEOLOGY

Under the supervision of Dr. Dhananjay Ravat, I studied planetary magnetism and space weathering effects, with particular focus on lunar swirls. My responsibilities included:

- Performing data analysis on various spacecraft using MATLAB and Python, including cleaning and combining data from multiple spacecraft, and creating high-resolution datasets and global maps for further scientific studies.
- Modeling crustal magnetic anomalies using Fortran and GMT.
- Mentoring two undergraduate students who joined the lab during my senior year.

Skills

- Highly skilled with Unix, MATLAB, Python, Fortran, C/C++, and GitHub.
- Strong written and verbal communication skills.
- Experience in grant writing and administrative management.
- Good attention to detail with a high level of accuracy.
- Excellent teamwork skills and mentorship experience.
- Knowledge of image and data analysis methods.

Research presentations

- LPSC Early Career Planetary Science Event (May 2020, virtual due to COVID-19) [abstract] [video]
- Undergraduate Research Showcase (April 2019, UK)
- 18th annual Kentucky Posters at The Capitol (February 2019) [abstract]
- CUWiP Poster Session (January 2019, Michigan State University)
- 85th annual SESAPS meeting (November 2018, UTK) [abstract]
- Kentucky SkyTalk at the MacAdam Student Observatory (April 2018)
- CUWiP Poster Session (January 2018, University of Virginia)
- University of Kentucky Astronomy seminar (December 2017) [abstract]

References

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