Dany Waller

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Research Interests

Remote Sensing

Computational Physics

Education

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

Mathematics (B.S.)
University of Kentucky
2019

Physics (B.A.)
University of Kentucky
2019

Publications

ORCiD

Google Scholar

Professional Societies

American Geophysical Union

American Physical Society

Sigma Pi Sigma

Experience

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.
- Exploring the relationship between local magnetic anomalies and spectral properties by analyzing space weathering effects using MATLAB and ArcGIS.
- Assisting in proof-of-concept destriping/denoising efforts using spectral subtraction method.

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) analysis 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.

June 2018 – May 2019

Junior Software Engineer

(ΣΠΣ)

Volunteer Work

AGU Science Policy Advocate

APS Science Policy Advocate

NASA Solar System Ambassador

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

UK Oswald Research & Creativity Competition 2018

UK High Scholarship in Physics 2017, 2018

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

Skills

- Highly skilled with MATLAB, Python, Fortran, GMT, ArcGIS, C/C++.
- Experience in grant writing and administrative management.
- Good attention to detail with a high level of accuracy.
- Excellent teamwork skills and mentorship experience.

Selected presentations

- Joint NASA Exploration Science Forum & European Lunar Symposium (July 2021, virtual due to COVID-19).
- LPSC Early Career Planetary Science Event (May 2020, virtual due to COVID-19) [abstract] [video]
- 18th annual Kentucky Posters at The Capitol (February 2019) [abstract]
- 85th annual SESAPS meeting (November 2018, UTK) [abstract]
- University of Kentucky Astronomy seminar (December 2017) [abstract]

References

Dr. Joshua Cahill
Deputy Director of the Lunar Surface Innovation Consortium
JHU/APL
Joshua.Cahill@jhuapl.edu

Mrs. Lori Halligan
Executive Director
Living Arts & Science Center
lhalligan@lasclex.org