Césarine Graham

Astrophysicist and Applied Mathematician

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Experience

Student Researcher / Laboratory Technician *Aug 2022 - Apr 2024*

- Undergraduate research assistant and laboratory technician at Dr. Matthew Schrenk's Astrobiology Lab.
- Integrating physics, mathematics, and computer science to model more accurate microbial habitability charts. Also utilizing machine learning to aid this process.
- Performing 'wet-lab' tasks such as Microbial Cultivation, Fluorescence Microscopy, and Field Sampling.

MSU Topology Research Internship *May 2023 - July 2023*

- Paired with a graduate student mentor to do an independent study project learning about a mathematical topic in the field of topology.
- Specified my studies in Exotic Manifolds and their connection to String Theory after months of intensive studies. Presented mathematical research in various methods and produced review articles that connected Topology to Theoretical Physics.

Mathematics and Physics Teaching Assistant *Aug 2022 - Oct 2023*

- Teaching assistant for College Algebra II and Physics I.
- Leading in-class activities, tutoring during office hours, and grading assignments for all sections of College Algebra II and for some Physics I.

Society for Hydroponic and Aquaponic Systems *Sep 2020 - Apri 2022*

- Lead researcher in the Deep Water Culture (DWC) Project and co-researcher in the Aquaponic Project. The food grown from each project was donated to a local food shelter each harvest.

NASA HUNCH Organization *Sep 2018 - Aug 2022*

- Member and co-organizer of the HUNCH program at Denbigh's Aviation Academy. The team successfully manufactured storage lockers for the International Space Station (https://bit.ly/33avSwg).

Education

Michigan State University *Aug 2022 - May 2024*

3.875 / 4 GPA

- Bachelor of Science
- Major in Astrophysics, Minor in Mathematics
- *Dean's Research Scholar* (Fall 2023 - Spring 2024)

Skills

Programming Software: Java, CSS, HTML, MATLAB, Python.
Engineering Software: CATIA, Autodesk Inventor, various PASCO Interfaces.
Data Analytics: Regression, Data visualization, Statistical Analysis, Predictive Modeling.
Public Outreach: Multi-media Presentations (i.e. Science on a Sphere, AAS Hyperwall, Social media, visual displays).
Laboratory: Microbial Cultivation, Fluorescence Microscopy, Safety Compliance, Development of SOPs, Field Sampling.

Conferences

3rd Data Science Student Conference (DISC), Michigan State University *Nov 10-11, 2023*
243rd American Astronomical Society (AAS) Meeting, New Orleans, Louisiana *Jan 7 – 11, 2024*

- NASA's Hyperwall Presentation Series