

Taylor Peterson

Physics and Mathematics

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CARTHAGE
COLLEGE

EDUCATION

09-2017 - 05-2021

Carthage College, Bachelor of Arts

Physics, Minor in Mathematics

EXPERIENCE

02-2018 - Present

Mission Team Lead, Lead Data Acquisition and Analyst, Lead Mechanical Engineer

Modal Propellant Gauging (MPG) in Microgravity Environments

Built a research payload that implements Modal Propellant Gauging, a high-resolution fuel gauging system in low-gravity environments that will be integrated on the SLS Orion Mission in the service module. This payload has seen successful flights on Blue Origin's New Shepard Vehicle in January 2019 and December 2019. Created Computational Fluid Dynamics (CFD) simulations of propellant tanks in microgravity environments. Used MATLAB to generate accurate Frequency Response Functions from the Data Acquisition System.

09-2018 - Present

Mission Team Lead, Lead Mechanical Engineer

Magneto-active Slosh Control (MaSC) in Microgravity Environments

Designed, integrated, and tested a membrane made of a metallic alloy material along with a set of helmholtz coils to generate a varying magnetic field to control the membrane in the propellant tank using CAD Modeling including SOLIDWORKS and Autodesk Inventor. The MaSC project is an effort to develop a free-floating membrane to suppress slosh in propellant tanks in microgravity environments.

09-2019 - Present

Lead Mechanical Engineer

Capillary Flow in Microgravity Environments

Designed a research payload that will predict equilibrium surface liquid configuration for three capillary flow vessel geometries in a microgravity environment. Properties of capillary flow are used in the design of fluid transport technologies and models for efficient liquid management in space - support systems and propellant management devices.

06-2020-08 - 2020

NASA Kennedy Space Center Intern - Advanced Engineering Development Branch

Modal Propellant Gauging - International Space Station (MPG-ISS)

Working with Engineers at NASA to design a payload for the implementation of MPG. This technology is being considered for use on the SLS/Orion Mission as well as onboard Gateway, the lunar orbiting station. I am designing a payload that implements this technology to be sent to the International Space Station for 30-60 days for continuous autonomous testing.

SKILLS

- CAD Modeling: SolidWorks, Autodesk Inventor
 - 2 years of experience creating models for structural and modal payload analysis.
- CFD Simulations
 - 2 years of experience creating CFD simulations to predict fluid behavior in microgravity environments.
- Confident public speaker
- C++, MATLAB, Python, R Studio
 - 2 years of experience creating and editing code for data analysis for MPG.
- Communication, Leadership
 - Historian for the Society of Physics Students eBoard: Record meeting minutes, send emails, and organize events.
 - Team Lead for MPG research project

PUBLICATIONS AND AWARDS

01-2019

Modal Propellant Gauging - Blue Origin Payload, Peterson, Taylor et. al

<https://wsgc.carthage.edu/ojs/index.php/wsc/article/view/243>

03-2020

Modal Propellant Gauging in Microgravity, Peterson, Taylor et. al

<https://wsgc.carthage.edu/ojs/index.php/wsc/article/view/300>

04-2020

2020 "Move it!" Lemelson-M.I.T. Student Prize Awardee

Competed in the Lemelson-MIT Student Prize Competition with Modal Propellant Gauging (MPG) against top schools, such as Harvard and MIT and surpassed over 200 applicants.