

# Taylor Peterson

*Aerospace Engineering*

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## EDUCATION

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- 08/2021 - 5/2026 (EST)**     **University of Central Florida, PhD**  
*Aerospace Engineering*
- 09/2017 - 05/2021**     **Carthage College, Bachelor of Arts**  
*Physics, Minor in Mathematics, GPA: 3.42*

## EXPERIENCE

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- 08/2021 - Present**     **Graduate Researcher**  
Using Star-CCM+ to create Computational Fluid Dynamics (CFD) simulations of microfluidics in low-gravity for study of osteoporosis. Researching bone loss in humans in microgravity to assist in CFD work and in lab experiments. This work is part of an experiment with IMEC USA that will fly on Blue Origin's New Shepard in the coming year.
- 06/2021 - 08/2021 & 06/2020-08/2020**     **NASA Kennedy Space Center Intern - Advanced Engineering Development Branch**  
*Modal Propellant Gauging (MPG) - International Space Station (MPG-ISS)*  
Worked with Engineers at NASA to design a payload implementing MPG, a fuel gauging method for spacecraft. Used Autodesk Inventor to design various aspects of the payload for testing, such as a front panel layout for payload to ISS communication. MPG-ISS will launch in a SpaceX Dragon Capsule and remain onboard the ISS for 30 days for autonomous testing.
- 09/2019 - 05/2021**     **Data Acquisition and Analyst Lead**  
*MPG - Propellant Refueling and on-Orbit Transfer Operations (MPG-PROTO)*  
Designed, built and tested a research payload that implements MPG and a Propellant Management Device to study fluid behavior at low fill fractions inside modeled propellant tanks in low-gravity. Used Autodesk Inventor to help design the payload to fit inside a double payload locker for flight on Blue Origin's New Shepard Vehicle (August 2021). This payload was also tested on Zero G's 727 in November 2020 & May 2021.
- 09/2019 - 05/2021**     **Lead Mechanical Engineer**  
*Capillary Flow in Microgravity Environments, RockSat-C Program*  
Designed a research payload to predict equilibrium surface liquid configuration for six different capillary flow vessel geometries in microgravity. Used Autodesk Inventor to design the payload and performed CFD simulations in SimFlow of flow vessels. Performed stress testing on support structures for design reviews. Developed and presented various conceptual, preliminary, and critical design reviews.
- 09/2018 - 12/2020**     **Mission Team Lead, Lead Mechanical Engineer**  
*Magneto-active Slosh Control (MaSC) in Microgravity Environments*  
Designed, integrated, and tested a set of Helmholtz Coils to generate a varying magnetic field to control a diaphragm made of a metallic alloy material inside of a modeled propellant tank. Assisted in design of support structures for Helmholtz Coils using SolidWorks.
- 02/2018 - 05/2021**     **Mission Team Lead, Lead Data Acquisition and Analyst, Lead Mechanical Engineer**  
*MPG in Microgravity - Future implementation on SLS/Orion*  
Built a research payload implementing MPG for microgravity testing. Created CFD simulations of propellant tanks and used Finite Element Analysis to predict resonant frequencies of propellant tanks in 1-g and micro-g. Used MATLAB to generate Frequency Response Functions from ground and in-flight data. This payload has flown on Blue Origin's New Shepard Vehicle twice in 2019.

## PUBLICATIONS & AWARDS

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- 04 - 2020**     **2020 "Move it!" Lemelson-M.I.T. Student Prize Awardee**  
Awarded the Lemelson-MIT Student Prize with MPG against top schools and surpassed ~200 applicants.
- 02 - 2020**     **Wisconsin Space Grant Representative, Space Grant 30th Anniversary**  
Represented the Wisconsin Space Grant at the Space Grant 30th Anniversary in Washington D.C. Presented research on Capitol Hill to Congress and other Space Grants.
- 09 - 2019**     **Peterson, Taylor *et. al*, "Modal Propellant Gauging in Microgravity"**  
*Proceedings of the 29th Wisconsin Space Conference, 2020, doi: 10.17307/wsc.v1i1.300*
- 09 - 2018**     **Peterson, Taylor *et. al*, "Modal Propellant Gauging - Blue Origin Payload"**  
*Proceedings of the 28th Wisconsin Space Conference, 2019, doi: 10.17307/wsc.v1i1.243*