

LIAM A. WARD

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EDUCATION

Purdue University, School of Aeronautics & Astronautics

West Lafayette, IN

Master of Science, Aeronautics & Astronautics

Expected May 2024

- GPA: 4.00 / 4.00
- Graduate Research Assistant
- Major in Structures and Materials
- Minor in Aerospace Systems

Relevant Coursework: Mechanical Behavior of Aerospace Materials, Fatigue of Structures and Materials, Finite Element Methods in Aerospace Structures, Multidisciplinary Design Optimization

Boston University College of Engineering, Kilachand Honors College

Boston, MA

Bachelor of Science, Mechanical Engineering

May 2022

- GPA: 3.94 / 4.00; Summa Cum Laude
- Concentration in Aerospace Engineering
- Matthew Isakowitz Fellowship 2022
- Kenneth R. Lutchen Distinguished Research Fellowship

Relevant Coursework: Structural Mechanics, Mechanical Vibrations, Compressible Flow & Propulsion, Dynamics of Space Vehicles, Aircraft Performance & Design

EXPERIENCE

Research Assistant

August 2022 – Present

Purdue Hypersonic Advanced Manufacturing Technology Center (HAMTC)

West Lafayette, IN

- Built detailed thermomechanical FEA models in ABAQUS to predict failure of mechanically and chemically bonded joints of dissimilar ceramic matrix composite materials for use as hypersonic leading-edge TPS.
- Used NASA CBAero to generate mechanical and thermal loading conditions on a notional hypersonic boost-glide vehicle and used an indirect OCP solver to optimize trajectories with mechanical and thermal constraints.
- Developed an integrated and automated multi-scale computational analysis toolset to rapidly assess the effects of mechanical tolerances at TPS joints on vehicle performance and mission capabilities.

Aerospace Engineer Intern

May 2022 – August 2022

Hedron

Virtual

- Completed Size, Weight, and Power (SWaP) estimates for a next-generation optical communications payload.
- Managed CAD assemblies, produced optical module layout concepts, and supported trade studies.

Structures Engineer Intern

May 2021 – August 2021

ABL Space Systems

El Segundo, CA

- Completed the conceptual and detailed design of a heatshield closeout panel system to protect the aft end of the first stage of the RS1 orbital launch vehicle from extreme pressure and temperature environments.
- Developed structural analysis models for flight hardware using FEMAP/NASTRAN.
- Created MATLAB script to size TPS required thickness.
- Researched and secured sources for material acquisition and manufacturing.

Intern

December 2020 – February 2021

Inversion Space

Virtual

- Identified requirements and specifications of and sourced components for a high-pressure propulsion fluids testing system and designed support structure for the system.
- Researched and generated critical flight hardware concepts and modeled those concepts with CAD.

PROJECTS

“Oxidizer Tank Dome,” BU Rocket Propulsion Group

September 2019 – March 2022

- Designed the ellipsoidal 12” diameter dome of a 200°F, 700 psi, pressure-fed, nitrous oxide tank for a liquid-fueled bipropellant rocket featuring a monocoque thrust structure.
- Produced mass-optimization programs for dome geometry in MATLAB.
- Conducted static simulations for a hold down test and supersonic flight conditions in ANSYS.

SKILLS

Computer: ABAQUS, FEMAP/NASTRAN, ANSYS

Mechanical, Siemens NX, Solidworks, Creo Parametric, OnShape, MATLAB, Python

ACTIVITIES

Member, AIAA, Tau Beta Pi

President/Co-Founder, BU Irish Association

Trained Piano Accompanist and Organist