

JULIAN AWAD

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EXPERIENCE

Propulsion and Payload Engineer

September 2021 - Present

Queen's Rocket Engineering Team

- Designing the team's first 3D-printed Hybrid Rocket Engine to compete in the SA Cup 10,000ft SRAD category
- Created Standard Operating Procedures (SOP) documentation for the safe operation of a cold-flow and hot-fire test, complete with hazard assessment, risk mitigation, and contingency planning
- Designing an autonomous glider payload to be launched from the rocket at apogee and collect atmospheric data, controlled by ArduPilot

Lockheed Martin - Hardware Engineering Intern

May 2021 - August 2021

Rotary Missions Systems - CSC Project

NATO Secret, Controlled Goods Program

- Performed detailed SolidWorks FEA analysis to validate equipment to Military Standard 901D
- Created an Excel VBA tool to generate shock response spectra from an impulse function for shock & vibe testing, resulting in a user-friendly program regularly used across the CSC Project
- Accomplished overall 2x cost reduction and 4x time savings by performing detailed make-vs-buy analysis on electronics enclosures and presenting to senior engineers
- Created and presented a whitepaper detailing the thermal, ingress protection, shock resistance, safety, and maintenance considerations of mounting locations for electronics enclosures
- Clearances Held: NATO Secret, Controlled Goods Program, Enhanced Reliability

PROJECTS & PUBLICATIONS

Undergraduate Publication

September 2021 - December 2021

An Investigation of Magnetic Radiation Shields for Human Space Habitats

Awad et al.

- Designed and conducted an experiment over 6 weeks to measure the viability of a superconducting magnet as an active radiation shield for lightweight space travel applications
- Manufactured a vacuum chamber with a cooling tube configuration, wire feed-through, and a beta particle detector capable of maintaining a vacuum of 0.1 Pa to minimize particle stopping power and reduce condensation
- Designed superconducting magnet configurations made of superconducting YBCO tape with a vacuum-tight cooling system to maintain critical temperatures of 77K
- Created a Python program to perform in-depth analysis of the raw data, including noise filtering, curve fitting, and extrapolation to demonstrate clear trends

TECHNICAL SKILLS

Mechanical Design

SolidWorks + Simulation, FDM 3D Printing, Autodesk Inventor

Programming

Python, SciPy, MATLAB/Simulink, LabVIEW, Git, L^AT_EX, C

Languages

English, French (Native Bilingual), Spanish (Working Proficiency)

EDUCATION

Faculty of Engineering, Queen's University, Kingston ON

May 2023 (Expected)

- Candidate for Bachelor of Engineering Physics, Mechanical Stream
- Dean's List with Honours - GPA of 3.75/4.3

Publications

- Julian Awad, Nikhil Menda, William Conway, and David Puddy, "Investigation of Magnetic Radiation Shields for Human Space Habitats," J. Undergrad. Eng. Phys. Phys. Exp. Queens, Section 1, Vol 3.