

Benjamin Kamer

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EXPERIENCE

Physical Sciences, Inc.

May 2024 – Aug 2024

Propulsion & Energetics Intern

Epping, NH

- Design feed system for 1000 pound-force experimental flight liquid rocket engine
 - Design and analyze valve assembly utilizing COTS ball valves and actuators to reduce cost, system complexity, and size
 - Size, select, and source all feed, purge, and pneumatic lines & valves for all engine fluid systems
 - Analyze impact of altitude on likelihood of ignition for a compact augmented spark igniter
- Design and analyze solid propellant gas generator for use in air breathing engine
 - Develop a solid fuel grain size and geometry simulation software, proving feasibility of a gas generator in an existing air breathing engine
- Assemble, verify, and test air breathing rotating detonation engine
 - Verify dimensions, oxidizer service clean, and assemble engine
 - Modify and run SOPs for firing of engine
- Assemble, test, and analyze experimental liquid rocket engine
 - Analyze tolerances on seals and perform closeouts of all major engine systems
 - Load and condition liquid oxygen and kerosene into test stand shortly before test
 - Perform post-firing analysis of engine and provide findings to improve future engine design

Boston University Rocket Propulsion Group

Sep 2022 – Present

Vice Director & Fluids Lead, Previously Red Team Lead

Boston, MA

- Responsible for a large portion of the team's major projects, as well as manage over 100 members
- Responsible Engineer for Bipropellant Rocket Propulsion & Feed System
 - Act as the team's Test Director for all static tests, ensuring all test objectives are met
 - Run tests, design autosequences, analyze performance, inspect engine and feed system after tests
 - Expected flight performance and trajectory analysis of rocket in Python based on test data
 - Autogenous drainage analysis of the Nitrous Oxide tank in MATLAB
- Design, manufacture, and test ground service equipment for Bipropellant Liquid Rocket
 - Pressurizes vehicle tanks, actuates pneumatic ball valves, purges engine, and fills Nitrous tank
 - Decreases complexity, reduces flight vehicle weight, and optimizes vehicle architecture
 - Built within ruggedized support case for ease of transport and rapid deployment
- Overhauling the team's Horizontal Test Stand to support cryogenic propellants
 - Modify and test COTS ball valves to support cryogenic propellants by adding weep holes, replacing seals with PTFE, reducing cost by 10 times
 - Design axial pressurant injector to minimize ullage collapse
- Write and run test SOPs for 2,500 lbf liquid rocket engine test stand
 - Ensure safety of all closeout team members, organize task order for team members
 - Handle & operate Nitrous Oxide liquid bottles, conducting leak checks for entire system

EDUCATION

Boston University

Sep 2022 – May 2026

Bachelor's Degree in Mechanical Engineering

Boston, MA

OTHER

Technical Skills: MATLAB, Solidworks, Fluids Systems Design, Cryogenic Systems Design, Visio, FEA, Test Engineering, 3D Printing, Python, DAQ, SMC-S-016, SMC-S-025, Hazardous & Cryogenic Operations