Eric Peters

Aerospace Structures Engineer

LinkedIn github.com/edp8489 eric@epeters.io

Aerospace structures engineer with experience in the entire development lifecycle of satellites, launch vehicles, and human-rated spacecraft. Areas of interest include composite design and advanced simulation (multi-body dynamics, nonlinear structural FEA).

My experience as an analyst has fostered an interest in software development, specifically using modern web technologies to improve the user experience of analysis tools.

I am driven by a passion for work that benefits the future of humanity and am open to branching out into industries beyond aerospace.

Professional Experience

Present – December 2016

Structures Design Engineer | New Shepard, Blue Origin, Kent, WA

- Responsible Engineer for Crew Capsule aft structure subsystem. Author engineering design packages for future configuration upgrades and support vehicle manufacturing through work order reviews and discrepancy resolution.
- Liaison between structures design team and flight operations group. Provide maintenance procedure reviews and repair definitions in support of program goal of 50% reduction in turnaround time between flights.
- Supported human flight certification process by conducting verification activities for 20 safety-critical assemblies within the Aft Structure subsystem, culminating in the successful first crewed flight in July 2021.
- Authored engineering analysis packages for composite and metallic components; defined coupon geometry and test procedures for designs requiring point design allowables; and conducted supersonic flutter assessment for all external panels.
- Sourced and established relationship with an additional composites supplier to meet AS9100 quality requirements and oversaw production of composite panels with $100k+ unit cost.

CATIA | Creo | HyperMesh | OptiStruct | GD&T

September 2021 – July 2021

Spacecraft Bus Architect, Freelance, Seattle, WA

- Conducted a conceptual design study for an ESPA-class weather radar satellite, culminating in the delivery of subsystem sizing tools, preliminary technical budgets, and a report comparing the merits of three architectural layouts against top-level mission requirements for ground coverage and mass/volume constraints.

Mass Properties | Trade Studies | SMAD

November 2016 – September 2014

Payload Segment Lead Engineer, Firefly Space Systems, Cedar Park, TX

- Led a team of three engineers to design and analyze payload fairing, payload attachment structures, and associated manufacturing tooling for the Alpha 1.0 launch vehicle.
- Instituted an elementary systems engineering process tailored around limited personnel and software resources to aid development of Design Reference Missions, technical budgets, and subsystem functional requirements.
- Developed the initial relationship between Firefly's executive team and Seedinvest, an equity crowdfunding platform, that resulted in over $1 million of seed round funding.
- Authored and maintained payload accommodations sections of the Firefly Alpha Payload User's Guide. Coordinated with customers to define mechanical and electrical interfaces, payload integration facility requirements, and multi-payload deployment CONOPS.

Autodesk Inventor | Ansys Composite Prep/Post

August 2014 – June 2011

Graduate & Staff Researcher, MIT Space Systems Laboratory, Cambridge, MA

- Designed motor assembly, chassis, and other structural components for Micro-sized Microwave Atmospheric Satellite (MicroMAS) 3U weather-sensing CubeSat. Supported hardware fabrication, vehicle integration, and qualification/acceptance testing of flight hardware. MicroMAS-1 and MicroMAS-2 demonstration missions launched in May 2014 and January 2018.
- Matured design of Regolith X-ray Imaging Spectrometer (REXIS) instrument primary structure from initial concept to PDR fidelity. Launched as part of NASA OSIRIS-REx mission in September 2016.

Femap/Nastran | Solidworks | MSC Adams

Skills

Computer-Aided Design (CAD)	Dassault CATIA/Solidworks, PTC Creo Parametric
Finite Element Analysis (FEA)	Altair Hyperworks, Ansys Mechanical, Femap/Nastran, MSC Adams
Programming Languages	LaTeX, Matlab, Python, Javascript/React, Go

Education

2014 M.S. Aerospace Engineering, Massachusetts Institute of Technology
2011 B.S. Aerospace Engineering, Massachusetts Institute of Technology

Projects

Engineering Blog — 2022-Current

epeters.io
Personal website showcasing portfolio of engineering tools along with blog posts inspired by technical topics I've encountered throughout my career.

Markdown | Jekyll

Stressed — 2023

Website
Calculate principal stresses, Tresca and von Mises failure theories, and plot Mohr's Circle for a given 2D or 3D stress state.

Javascript | React

Galvanic Compatibility Tool — 2022

Website
Visualize the potential for galvanic corrosion between pairs of dissimilar metals and recommended surface treatments for each. References MIL-STD-889-C.

Javascript | React

Countersunk Joint Data Visualization — 2022

Website
Visualize strength data and associated nondimensional knockdown factors for countersunk fasteners of varying materials and head styles. References MIL-HDBK-5J / MMPDS-01 data.

Javascript | React

Publications

1. Blackwell, William et al. (2013). "MicroMAS: A first step towards a nanosatellite constellation for global storm observation". In: *Proceedings of the AIAA/USU Conference on Small Satellites*. Around the Corner, SSC13-XI-1.
2. Peters, Eric (2012). "Challenges of Mechanism Design for Small Educational Satellites". In: *Mechanical Engineering Technology Symposium*. Lexington, MA: MIT Lincoln Laboratory.
3. — (2014). "Dynamic Instabilities Imparted by CubeSat Deployable Solar Panels". MA thesis. Massachusetts Institute of Technology.
4. Peters, Eric et al. (2014). "Design and functional validation of a mechanism for dual-spinning cubesats". In: *The 42nd Aerospace Mechanism Symposium*. NASA Goddard Space Flight Center.