STEVEN KIEFER

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Summary

I am a structural analyst with over 20 years experience working in the space industry, with significant experience with deployable structures, composite materials design & optimization, non-linear dynamics, geometric non-linear behavior, as well as traditional loads and dynamics & structural integrity assessments. I have consistently demonstrated innovation in simulation and mechanical test planning, execution, and data processing. In particular, weaving test and simulation to predict and/or verify product performance particularly when 'test as you fly' is not practical or possible. I have a passion for automation in simulation & test data processing, as well as building analytical tools to put specialized abilities into the hands of more engineers, technicians, and business development team members. I have excellent presentation & documentation skills and have demonstrated the ability to concisely distill and present complex topics in a digestible manner.

Technical Skills

- **Finite Element Analysis**: Ansys, Nastran, Abaqus
- **Numerical Analysis, Data Processing, & Automation**: Python, Pandas, SciPy, Numpy, OpenCV, Plotly, Streamlit, Dash

Recent Professional Experience

Redwire (Deployable Space Systems) | Goleta, CA - February 2014 - present (Independent Contractor)
Projects / Products: PPE[1] SAW, iROSA[1, 2, 3], IXPE [1] SAW, ROSA GEO Qual, ROSA Flight Experiment [1, 2, 3]
Lead structural & dynamic analyst for all phases (launch, deployment, deployed) of various solar array wing (SAW) products. Developed unique simulation methods for new technologies[1]. Worked with internal and external stakeholders to plan verification methods, identify risks, design structural & dynamic tests, simulate test & flight environments, & negotiate requirements as needed. Designed and analyzed rigid and flexible composite structures. Lead structural integrity efforts including fracture control, fatigue assessments, bolted joint analysis, composite failure, and bonded joint strength. Performed science-related structural analyses & data reduction including model correlation to vacuum dynamics testing. Developed python-based flight experiment data reduction tools including a real-time, time-varying filter of streamed data (from ISS) for real-time assessment of on-orbit swept sine dynamics testing (ROSA Flight Experiment).

ATK Space (Able Engineering) | Goleta, CA - July 2004 - January 2014
Projects / Products: Orion CEV Solar Array Wing, X-32
Composite structures lead engineer and structural analyst. Responsibilities included managing design, analysis, test, and fabrication tasks for the primary composite structural elements, developing specifications for composite structures to ensure that traceability and performance requirements are met, and managing sister-ATK site activities including material/parts procurement, composite part fabrication, design, analysis, and test.

Education

BS, Mechanical Engineering; University of California, Santa Barbara (2002)

Keywords

spacecraft, structural analysis, loads & dynamics, deployable structures, composite design and analysis, non-linear dynamics, non-linear simulation, automation, fracture control, design of experiment, structural verification, data analysis, analysis methods development, root cause corrective action lead