

LA-UR-24-26026

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Title: Evaluating the Effect of Shaker Placement Optimization Priorities on Multi-Axis Test Results

Author(s): Djishev, Risto; Elrod, Kieran; Tasik, Connor Armstrong; Danforth, Shannon Maureen; DeClerck, James; Ouellette, Brittany Joy; Schultze, John Francis

Intended for: Mixer between the Los Alamos Dynamics Summer School (LADSS) program and the Sandia Nonlinear Mechanics and Dynamics (NOMAD) program at Fuller Lodge on June 26, 2024.

Issued: 2024-06-20



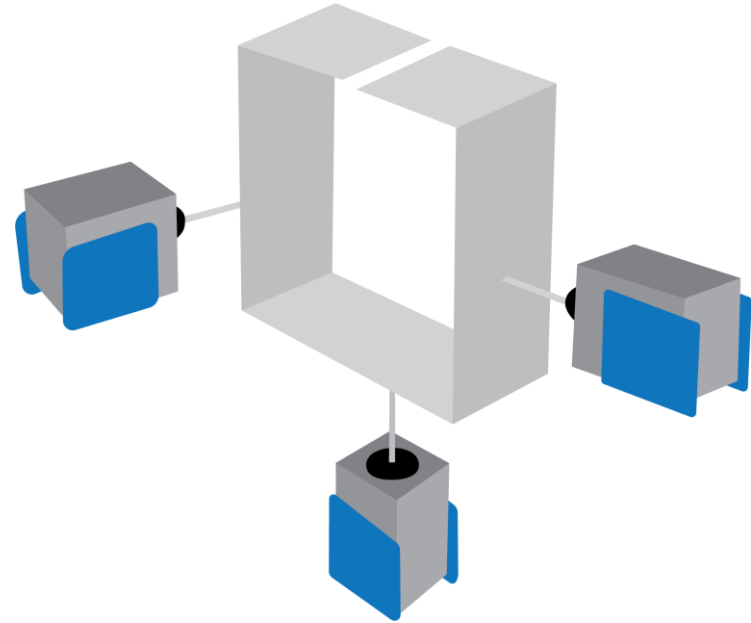
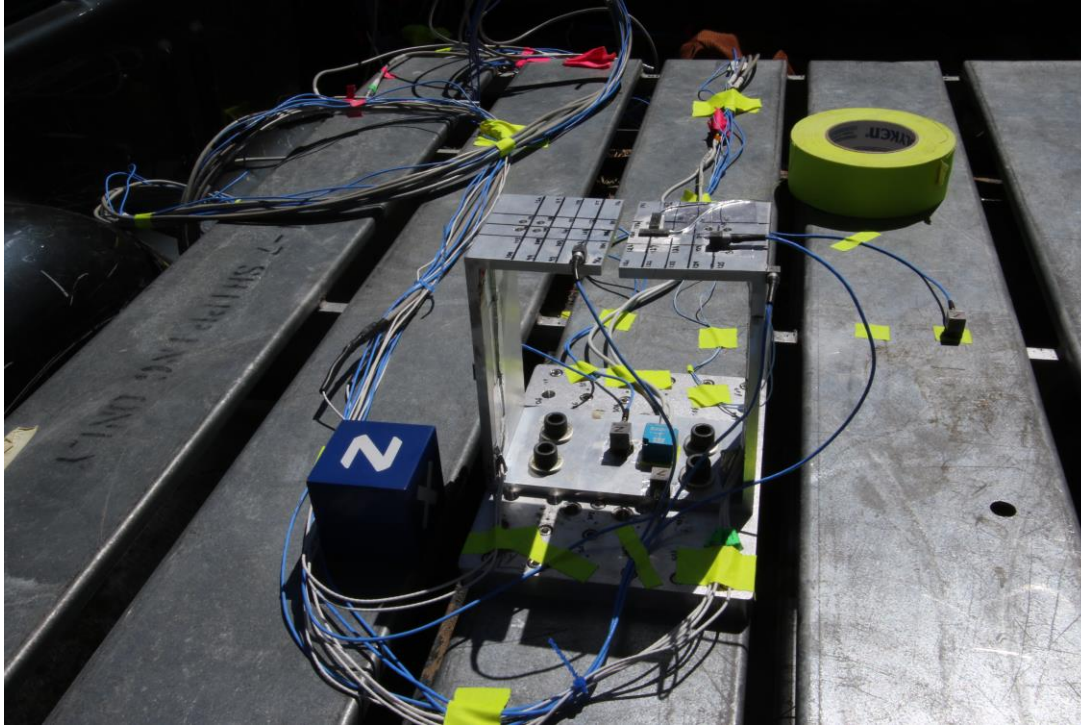
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Evaluating the Effect of Shaker Placement Optimization Priorities on Multi-Axis Test Results

Students: Risto Djishev, Kieran Elrod, Connor Tasik
Mentors: Shannon Danforth, Jim DeClerck, Brittany Ouellette, John Schultze

June 26, 2024

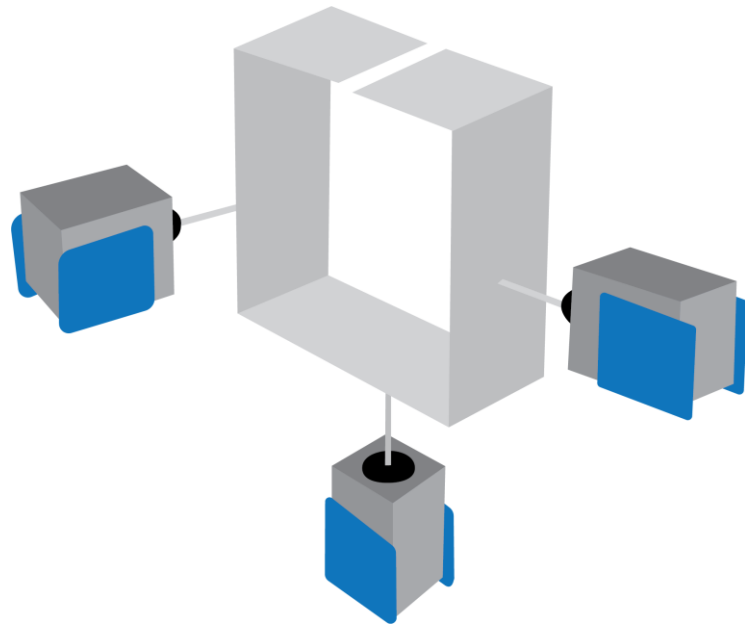
**Multi-axis tests can better emulate field environments,
but determining shaker placement is difficult.**



Optimization algorithms are a good way to select shaker locations and directions.

A shaker placement optimization looks like:

- Choose the **shaker degrees of freedom**
 - Location and direction
- To **minimize some cost**
 - E.g., error between field and test data
- While **satisfying some constraints**
 - E.g., keep shaker force below a threshold



This project evaluates how test results reflect optimization cost and constraints.



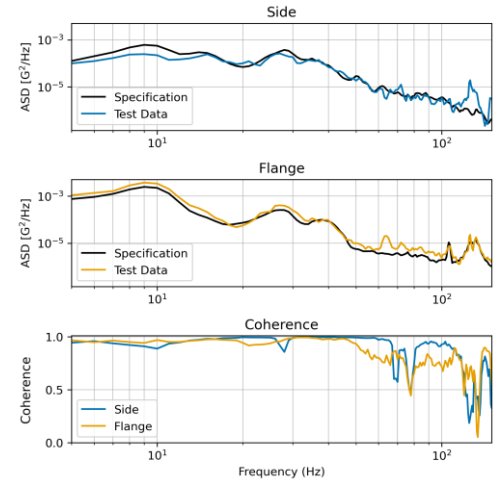
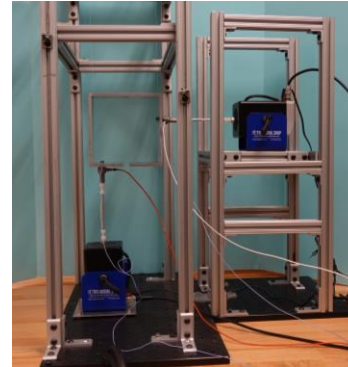
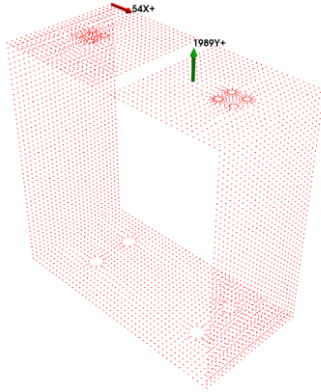
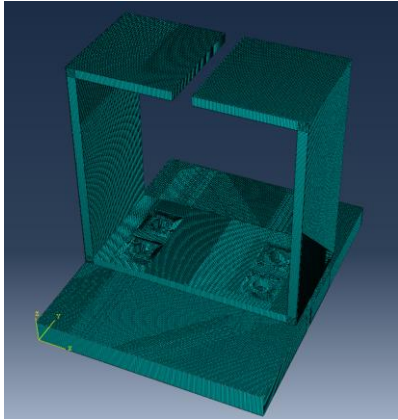
Rattlesnake
Vibration Controller



Sandia National Laboratories



python
powered



Create and calibrate
a finite element
analysis model.

Use the SDynPy
Python toolbox to
optimize shaker
placement.

Run tests with
optimization results.

Analyze: Do test data
reflect our optimization
cost/constraints?