INTEGRATED VIBRATION AND ACCELERATION TESTING FOR SPACE PAYLOADS

Summary
The goal of the research is to develop the capability to provide integrated acceleration, vibration, and shock testing using a state-of-the-art centrifuge (Phoenix Centrifuge) at the NASTAR Center, in order to subject payloads to the synergistic effects of combined environments. By providing more realistic load profiles, combined environment testing has the potential to significantly reduce payload mass, test costs, and mission risk.

This contract is a follow on from a proof of concept demonstration performed in 2008 by NASTAR Center and AAAI. This contract expands on the original design and plans to employ a larger (electro-magnetic) shaker, a CubeSat-class satellite, increased instrumentation (~10 accelerometers), and features a series of combined environments testing with multi-axis loads, as well as strong modeling and simulation elements.

Objectives
- To develop the capability to provide integrated acceleration, vibration, and shock testing in the ATFS-400
- To obtain a Phase 2 Small Business Technology Transfer award

Customer/Partner
American Aerospace Advisors, Inc (AAAI) and Drexel University. NASA Kennedy Space Center is the sponsor of the STTR.

Status
Complete (Fall 2012)

Future Publications
STTR Final Report