# MIT TERSat Antenna Deployment Test

## Problem Statement

- STACER deployment system experiment will investigate deployable structures and mechanisms and control of large antenna structures
- Requested flight allows testing of deployment and dynamic response in a microgravity environment
- The TERSat system will support AFRL and NASA users and scientists at MIT and Stanford.

## Technology Development Team


- Student Lead: Emily Clements, MIT Aero/Astro Graduate Student (egrosse@mit.edu)
- PI: Professor Kerri Cahoy, MIT (kcahoy@mit.edu)


## Proposed Flight Experiment

**Experiment Readiness:**

- Experiment will be ready for flight in March 2013.

**Test Vehicles:**

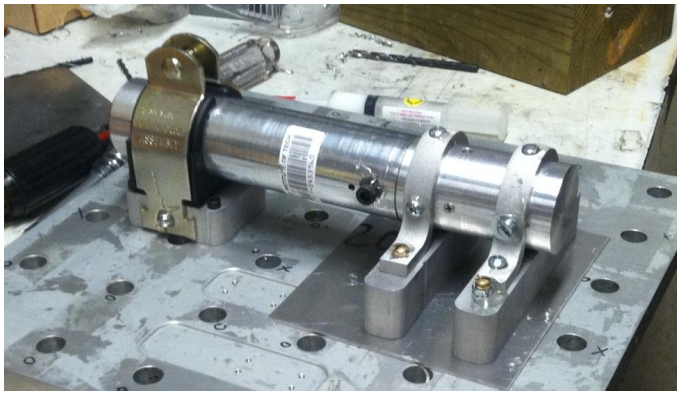
- Parabolic Aircraft

**Test Environment:**

- Experiment has not previously been flown.

**Test Apparatus Description:**

- Shaker table drives motion of antenna
- Supported by amplifier, signal from laptop
- LabView operator interface



Stowed Configuration

## Technology Maturation

- Prototype of the system must be demonstrated in relevant environment to achieve TRL 7
- Steps to achieve testing in relevant environments:
  - Vibration test (complete)
  - Thermal test (pending)
  - Microgravity test (proposed)
- Deadline: August 2013

## Objective of Proposed Experiment

- Demonstrate deployment in microgravity environment
- Determine resonant frequency of antenna in microgravity environment
- Implement lessons learned from microgravity deployment test in flight design
- Use structural resonant frequency measurements in design of attitude control system

**Technology Area 8 : Science Instruments, Observatories, and Sensor Systems**
**Technology Area 12: Materials, Structures, Mechanical Systems, and Manufacturing**