

# Research Opportunities in Spacecraft Actuator Design



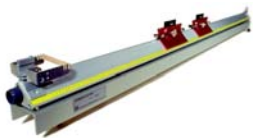
We are seeking students with a variety of technical skills (**MAE**, **ECE**, **AEP**) to participate in a **NASA Project**: Control of Resident Space Objects through Eddy-Current Actuation. Contact: Professor Hincey (bmh78@cornell.edu)

A key component of the investigations involves the development of a novel low-friction test bed.



**Power Electronics:** This subteam will implement a high bandwidth current control loop for an electromagnet.

**Skills:** Experience with analog circuit design required. Matlab, Simulink, and Labview experience a plus.



**Experimental Modeling:** This subteam will refine the test bed to empirically model eddy-current interactions among spacecraft.

**Skills:** (1) CAD and fabrication experience beyond Sophomore Design. OR (2) Dynamical systems modeling.



**Micro-Controller:** This subteam will instrument the test bed using a microcontroller and a suite of heterogeneous sensors. Challenges include: no contact, wireless collection, and low weight constraints

**Skills:** Experience with microcontrollers desired. Experience with Matlab and Simulink a plus.

