



# American Institute of Aeronautics and Astronautics

University of Nebraska-Lincoln  
Student Chapter

# CanSat Design Competition

- **Mission:**

- Design an autonomous CanSat to be dropped out of a helicopter
- Must have a payload of a raw chicken egg
- Collect and transmit telemetry data
- The egg must survive the fall from the helicopter
- The CanSat must descend by means other than a parachute or parafoil

# CanSat Design Competition

- **Results:**
  - Received 4<sup>th</sup> place
  - with an award of \$750.

Before

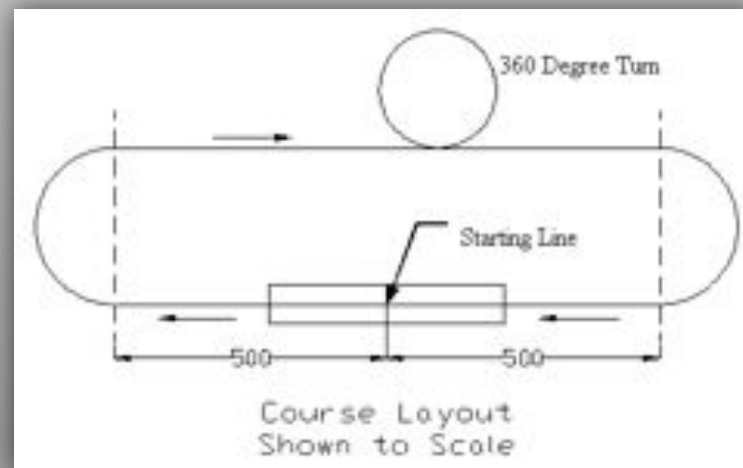


After



# Design/Build/Fly

- **Mission:**
  - Design, Build, & Fly Remote Controlled Airplane
  - Theme of contest was “Baseball Team Plane”
    - Carry softballs and wood dowels as a payload
  - All flight hardware has to fit in a 2’x2’x4’ case
  - 3 missions (1 Speed Flight & 2 Payload Flights)



# Design/Build/Fly

- Results
  - First year of contest
  - Received 46<sup>th</sup> place out of 69 teams
  - Only team made up of mechanical engineers





UNIVERSITY OF  
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Lincoln



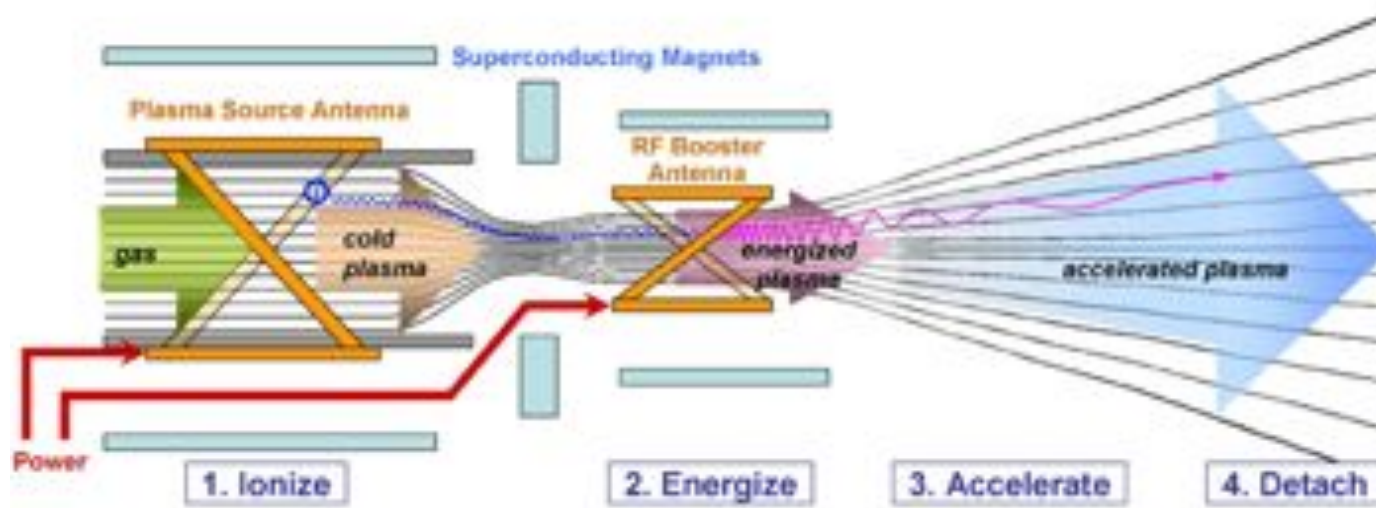
**NEBRASKA**  
**MICROGRAVITY**  
**UNIVERSITY**

Cryocooler Validation for the VASIMR ISS Demonstrator Mission

# VASIMR concept

## Variable Specific Impulse Magnetoplasma Rocket

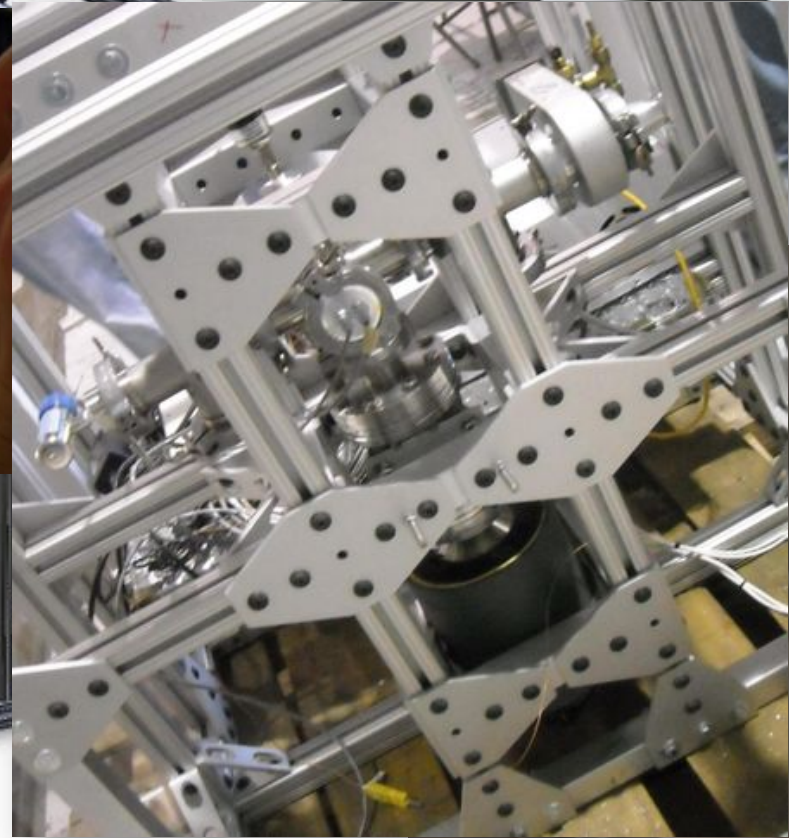
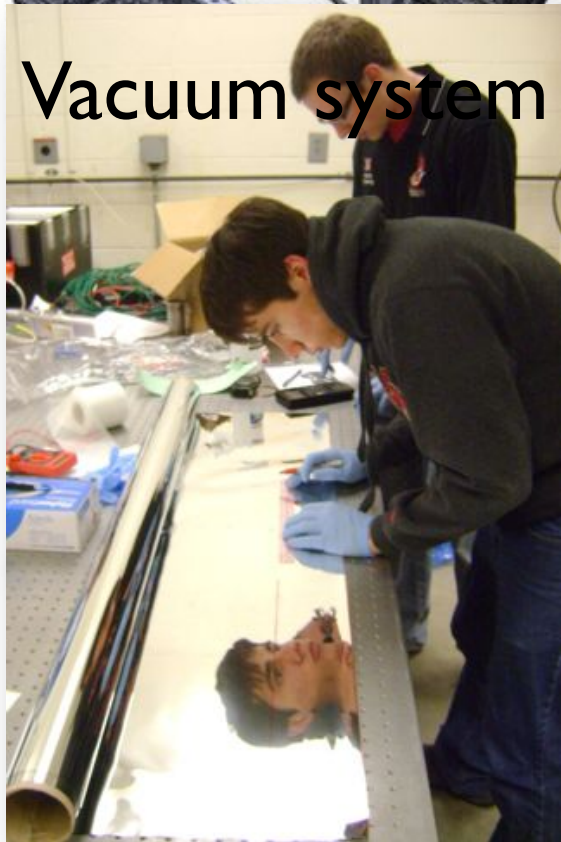
- Low thrust
- High Specific Impulse
- Long Firing Time



Cryocooler Validation for the VASIMR ISS Demonstrator Mission

# Experiment Setup

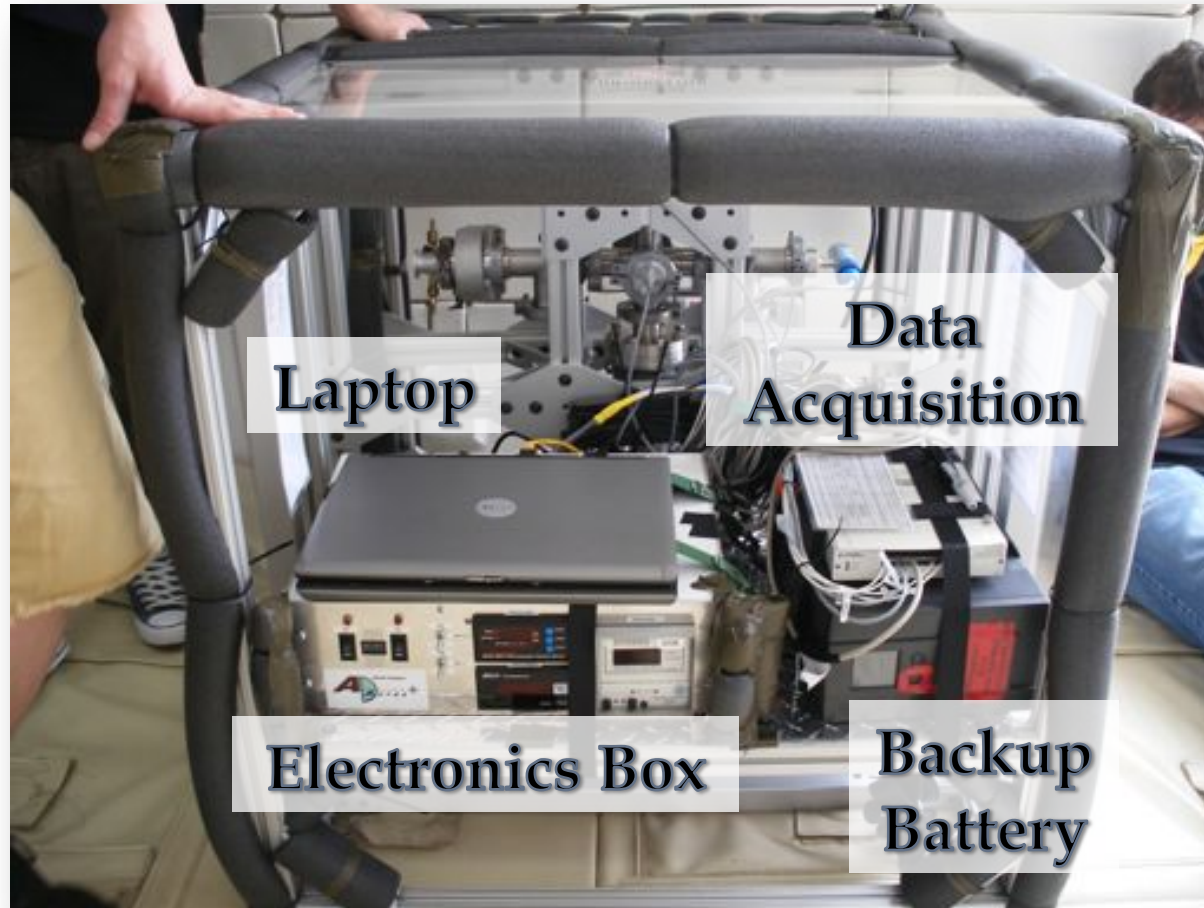
- Design experiment box
- Design and construct inf
- Vacuum system



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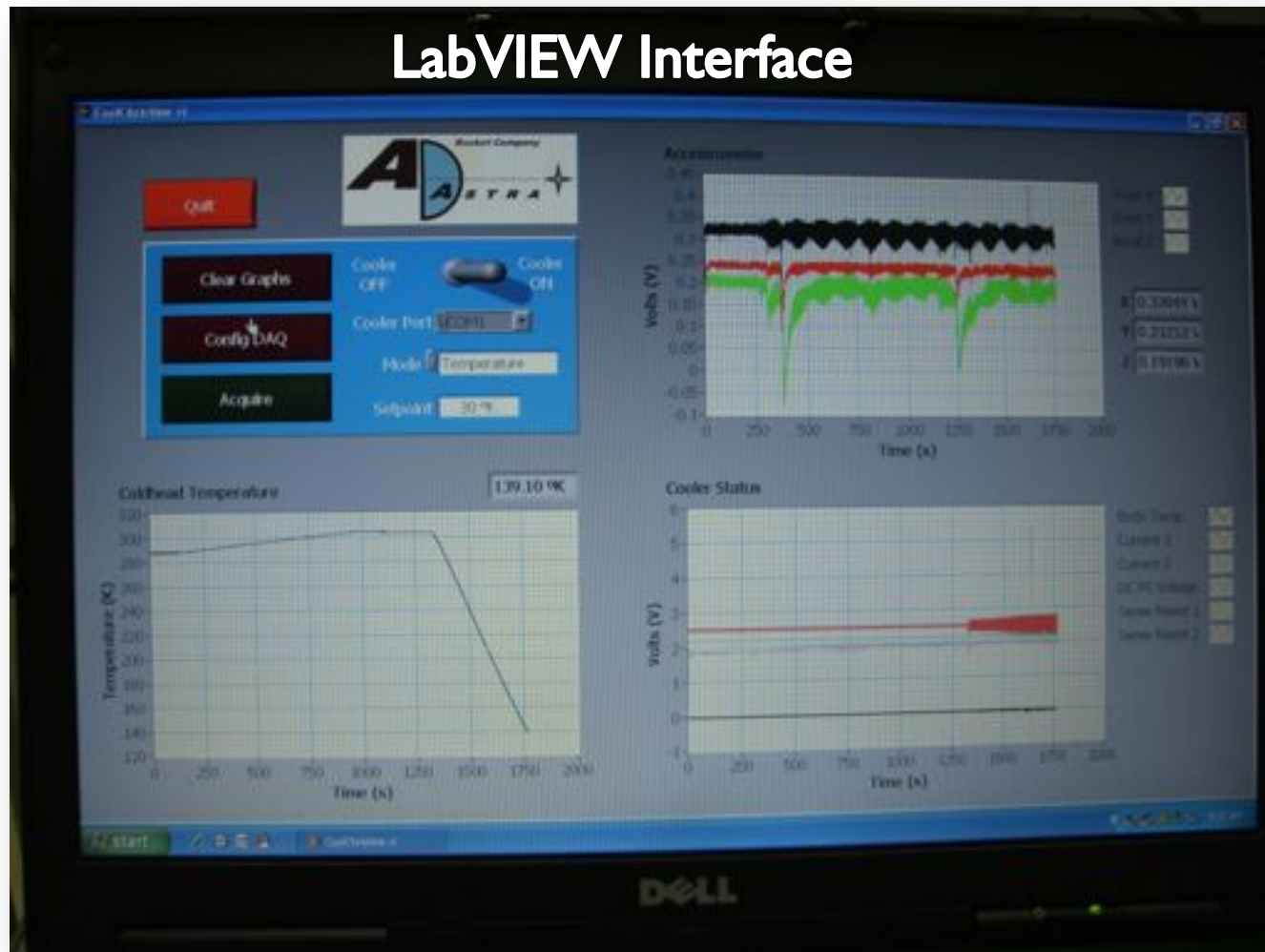
# Data Acquisition of Pressure, Temperature, and Power



Cryocooler Validation for the VASIMR ISS Demonstrator Mission

# Data Acquisition of Pressure, Temperature, and Power

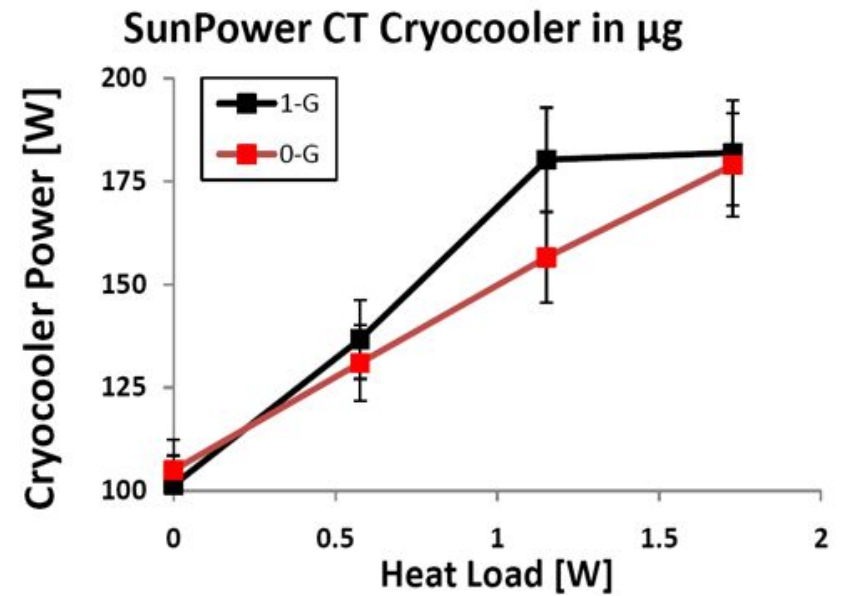
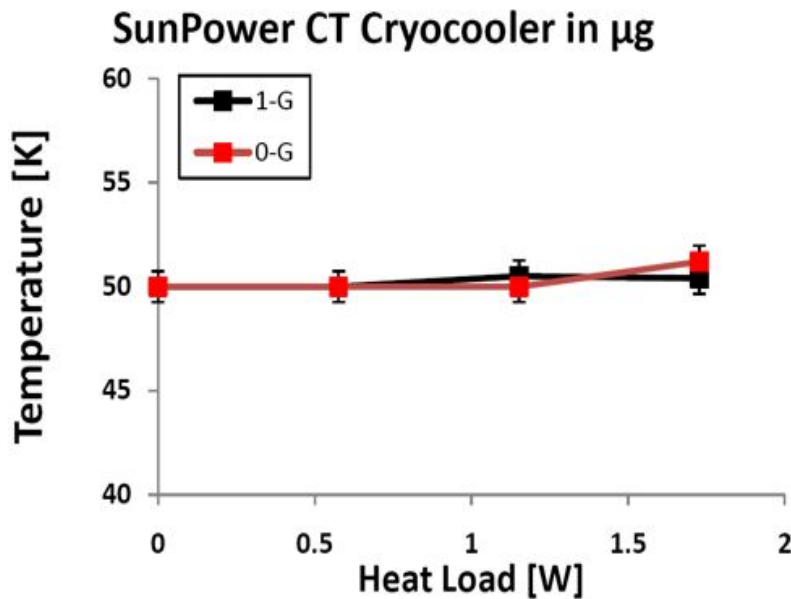
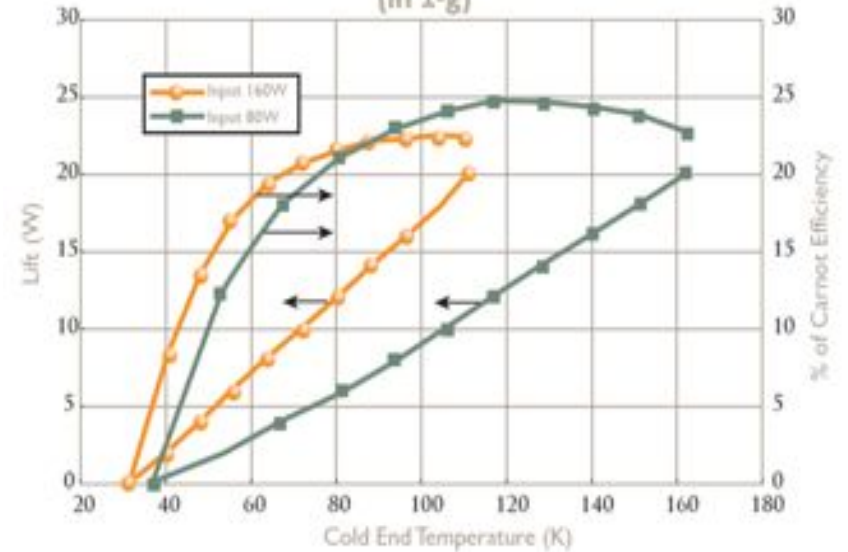
## LabVIEW Interface



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# Results

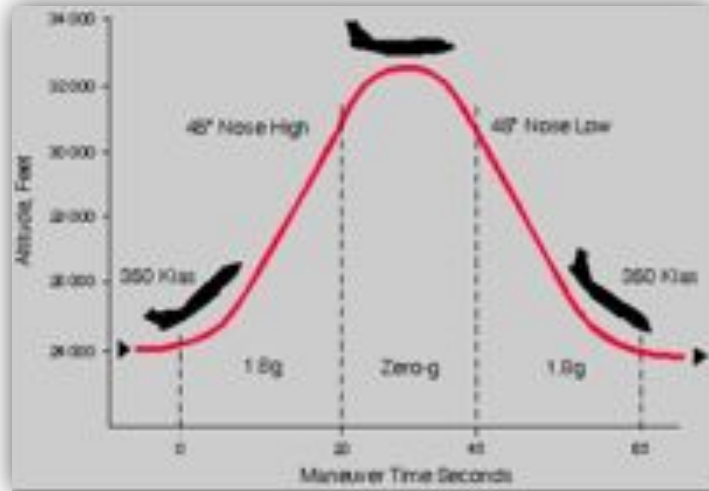
**CryoTel CT Measured Performance (in 1-g)**



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# Reduced Gravity Parabolas



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# Outreach Experiments



Magnetic Equilibrium  
*Conservation of Energy*

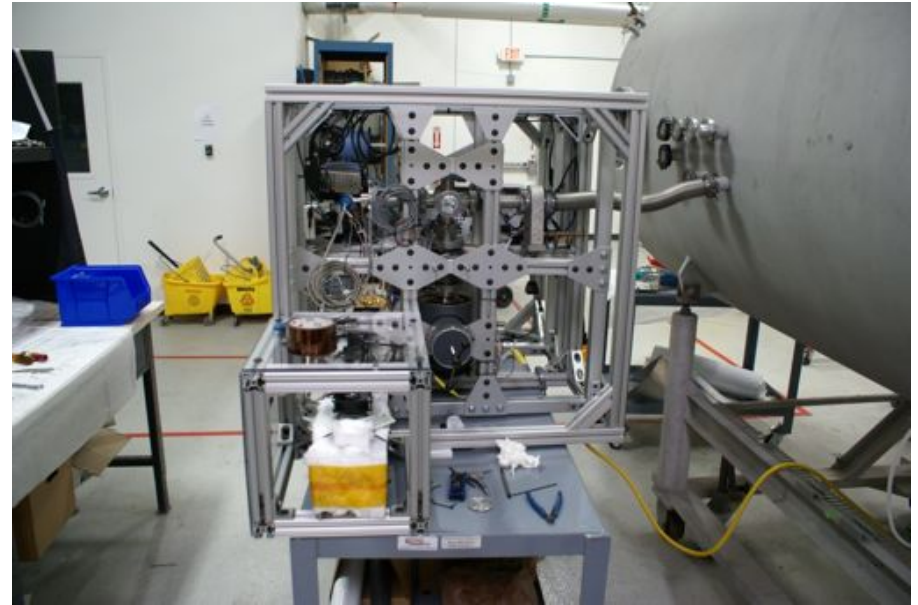
Gyroscopic Stability  
*Angular  
Momentum*



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# Future Work

- Full characterization in relevant environment.



# UNL Microgravity 2010

Derek, Eldon, Khoa, Andrew, Kyrik, Joseph



Andrea, Kevin, Carl, Benjamin

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