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\textsuperscript{th} place
  – with an award of $750.
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 46th place out of 69 teams
  – Only team made up of mechanical engineers
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 infrared MLI
- Vacuum system

Cryocooler Validation for the VASIMR ISS Demonstrator Mission
Data Acquisition of Pressure, Temperature, and Power

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Data Acquisition of Pressure, Temperature, and Power

LabVIEW Interface

Cryocooler Validation for the VASIMR ISS Demonstrator Mission
Results

Cryocooler Validation for the VASIMR ISS Demonstrator Mission
Reduced Gravity Parabolas

Cryocooler Validation for the VASIMR ISS Demonstrator Mission
Outreach Experiments

Magnetic Equilibrium
Conservation of Energy

Gyroscopic Stability
Angular Momentum

Cryocooler Validation for the VASIMR ISS Demonstrator Mission
Future Work

• Full characterization in relevant environment.
UNL Microgravity 2010
Derek, Eldon, Khoa, Andrew, Kyrik, Joseph

Andrea, Kevin, Carl, Benjamin
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