



# Electromagnetic field measurements on Suborbital Reusable Launch Vehicles

## Problem Statement

- sRLVs will most likely be flying multiple payloads which may interfere with each other.
- We will develop a system to measure the internal spacecraft environmental conditions (electric and magnetic field for this experiment).
- We will also investigate the possibility of measuring the global electric circuit
- All payloads and spacecraft providers could potentially benefit from these results.

## Technology Development Team

- Principle Investigator:  
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- Project is entirely funded by:  
The JHU Applied Physics Lab,
- sRLV Venders are potential partners in this project

## Proposed Flight Experiment

### Experiment Readiness:

- The APL sRLV Environment Monitoring System (ASEMS) is currently ready for flight.

### Test Vehicles:

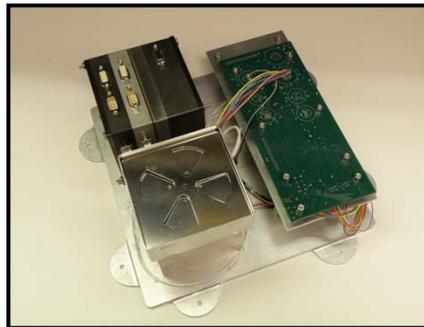
- The ASEMS is proposed for sRLV flight.

### Test Environment:

- This experiment is will measure the internal sRLV spacecraft environment during a flight provided by the Flight Opportunities program.

### Test Apparatus Description:

- The ASEMS is a completely self contained experiment consisting electric field detector, magnetometer, controller boards (with memory storage), internal power supply and base plate.
- The instrument suite is <5.5 kg with dimensions of < 26 cm<sup>2</sup> x 12 cm



## Technology Maturation

- Development of the ASEMS is completed and at TRL 6.
- This experiment will be at least a TRL 7 after flight.

## Objective of Proposed Experiment

- Objectives of proposed flight:
  - Rapidly develop a low cost, COTS-based monitoring suite
  - Characterize the potential for electro-magnetic interference on sRLVs
  - Evaluate the potential for measuring the global electric circuit
- This experiment is expected to produce internal spacecraft electric and magnetic field data which can be used to asses potential interference issues and characterize the internal spacecraft environment.

List here the applicable Technology Areas addressed by your technology. See [www.nasa.gov/offices/oct/home/roadmaps](http://www.nasa.gov/offices/oct/home/roadmaps)