Student Flight Projects: HASP, RockOn, RockSat

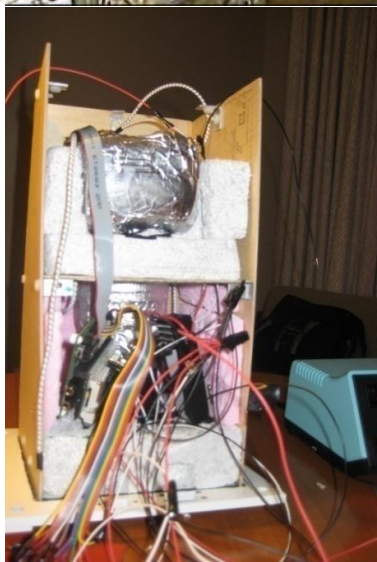
Kevin Shinpaugh, Ph.D.

Space @ Virginia Tech
Center for Space Science and Engineering Research

HASP Balloon Projects

http://laspace.lsu.edu/hasp/

- ARTEMIS – Academic Research Team for the Establishment of a Lunar Magnetic Field Investigation System
- MIL – Magnetic Investigation of Luna
- FIREFLI - Flying Infrared Experiment For Lunar Investigation
- Support: NASA & VSGC

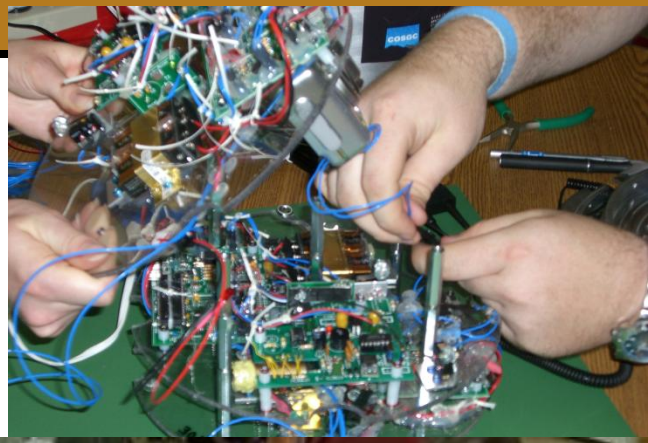


Space @ Virginia Tech
Center for Space Science and Engineering Research

RockOn

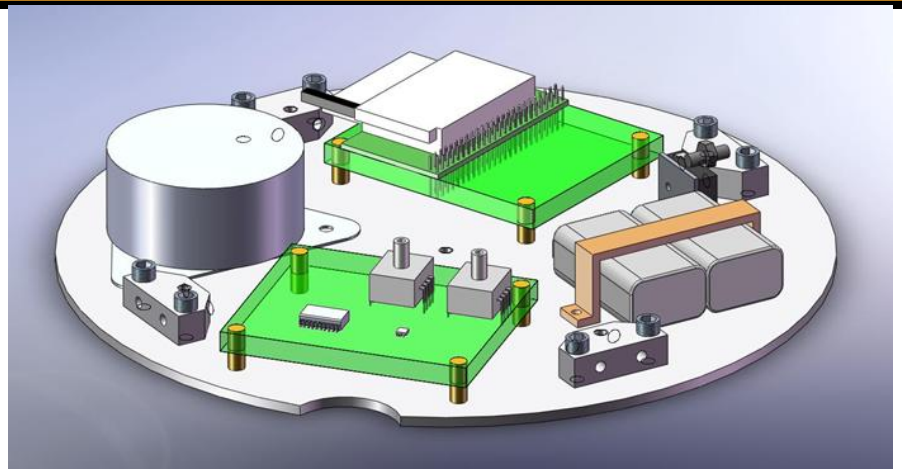
- Six day workshop
- Build, integrated, lunched and recovered sounding rocket payload
- Sponsored by:
  - Colorado Space Grant Consortium
  - Virginia Space Grant Consortium
  - National Space Grant Program
  - Wallops Flight Facility
- VSGC supported Students and Faculty to attend since inception

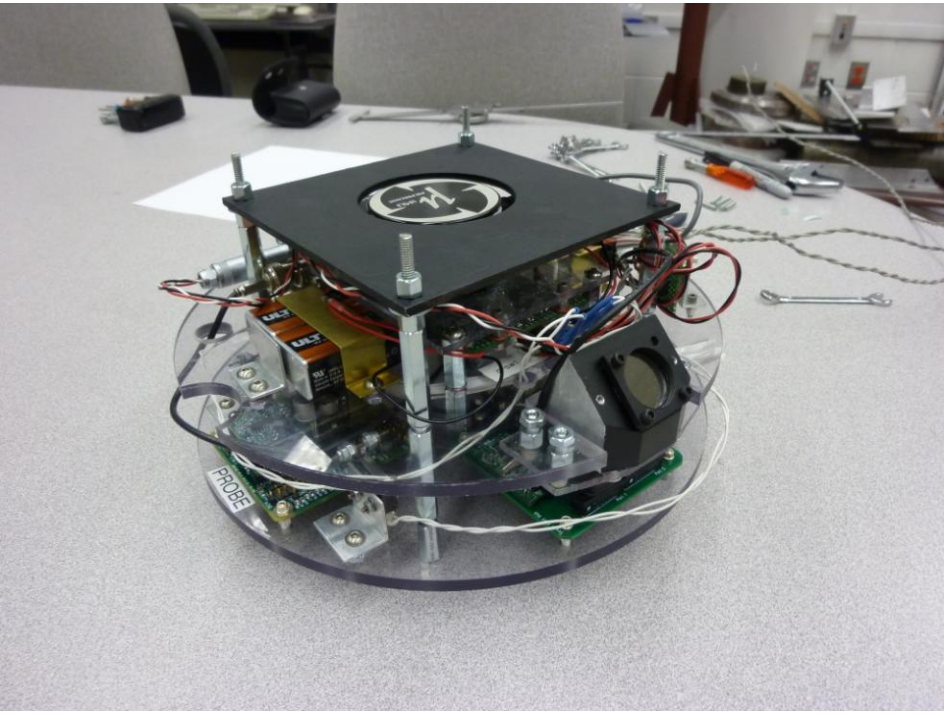
http://spacegrant.colorado.edu/national-programs/rockon-2014-home

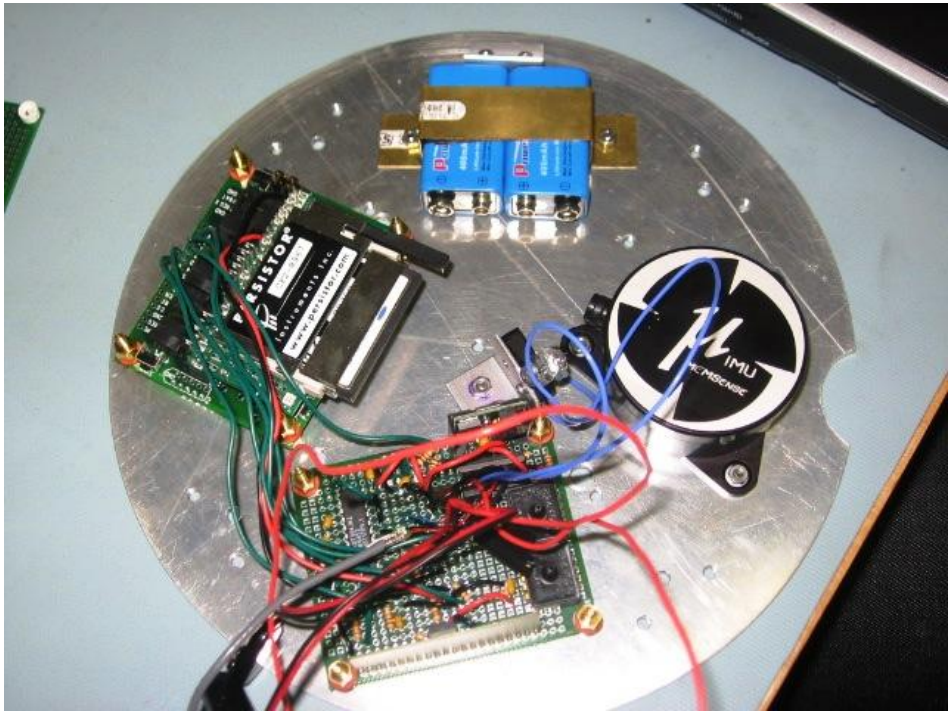


Sounding Rocket Projects

- Hy-V – Scramjet Testing
  - RockSat 2008/2009
- Nitrous Oxide Sensor
  - RockSat 2010/2011







RockSat 2014

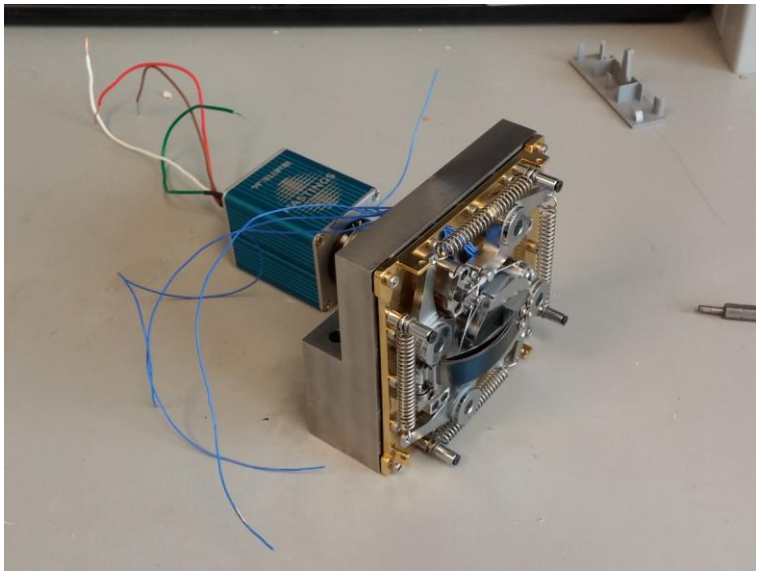
Aperture Cover Release Mechanism (ACRM)

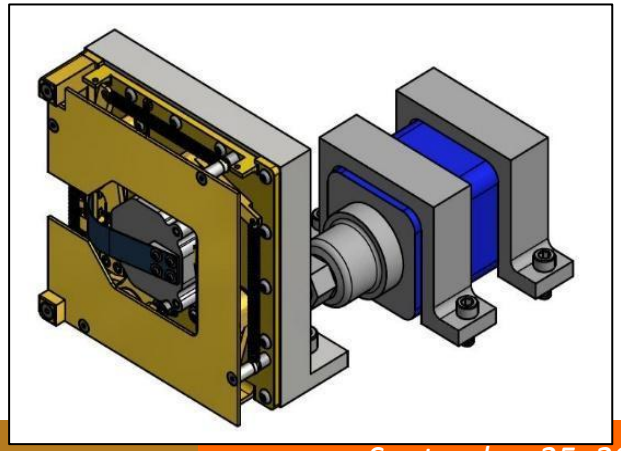
Objective

- Test deployment of instrument cover release mechanism for LAICE Cubesat

Operation

- On-board timer signals thermal knife fire at T+3:00 to begin cap deployment
- Spring-loaded release of cap
- Arduino records cap deployment state





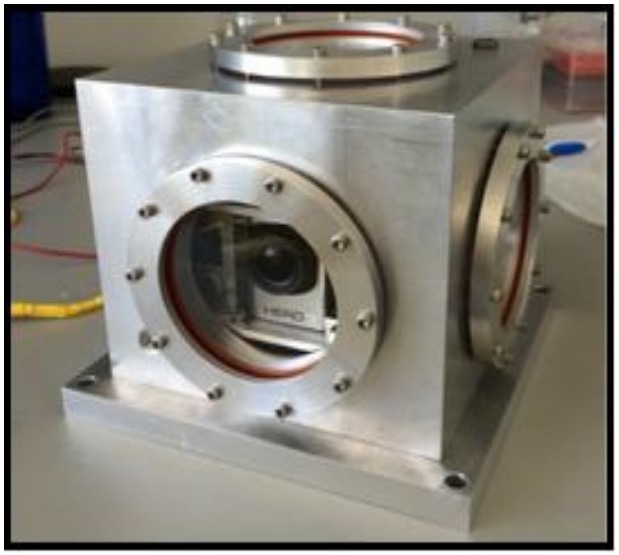
Virtual Reality Experiment (VRE)

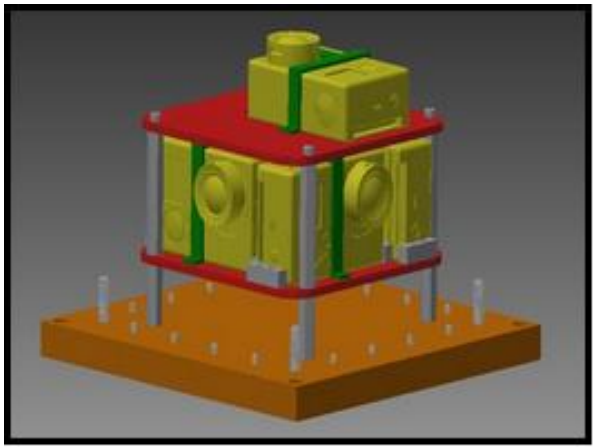
Objective

- Record high definition panaromic video of Rocksat-X mission

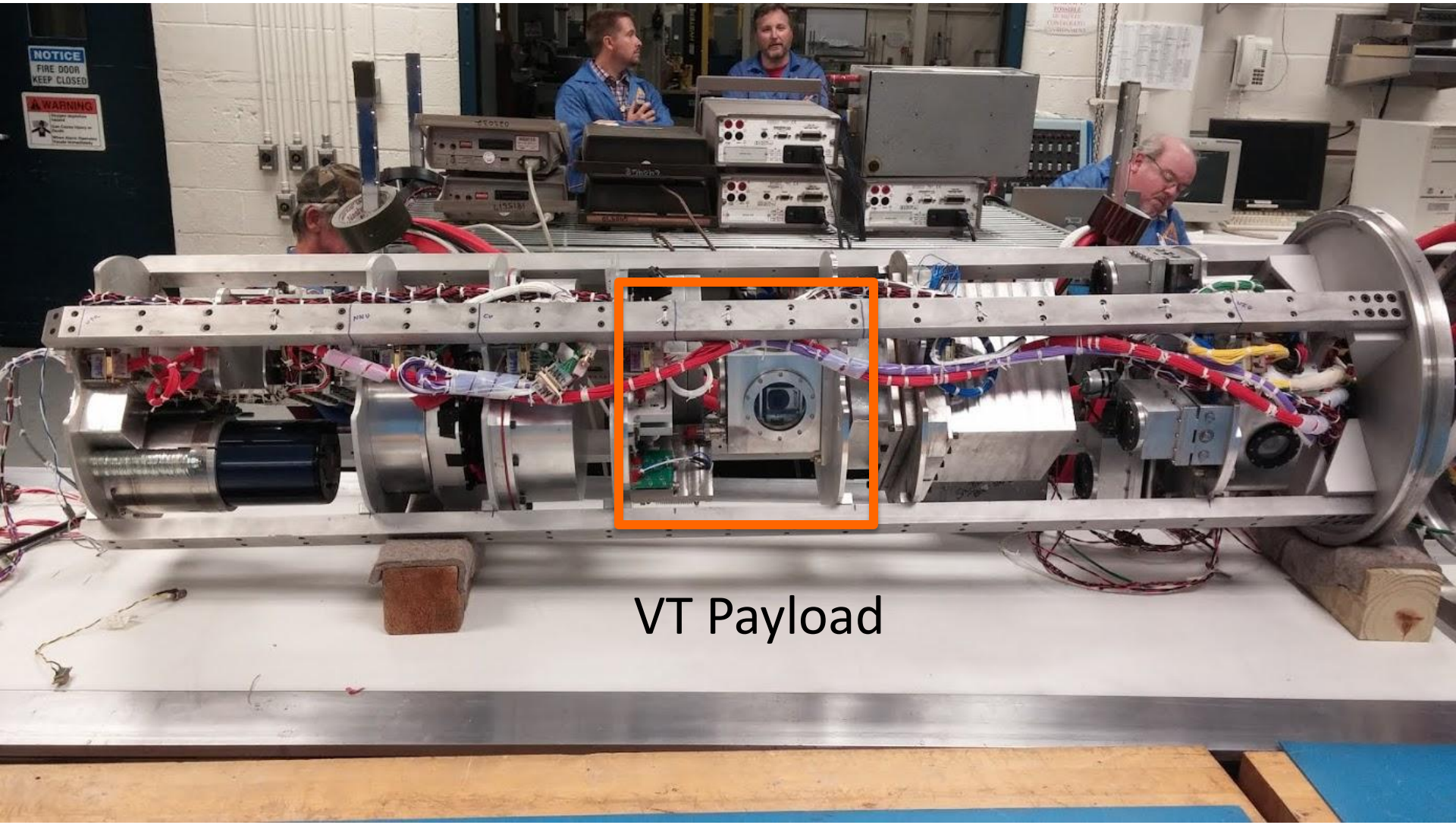
Operation

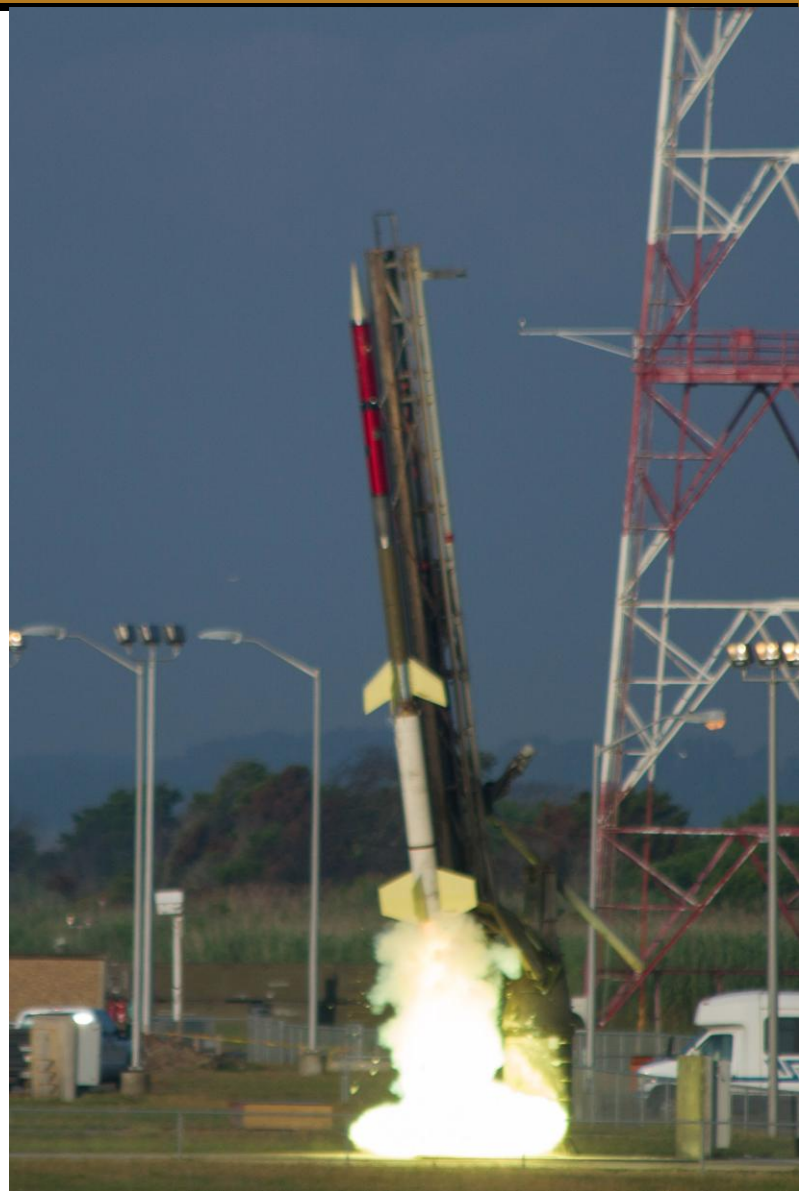
- Turn on cameras at mission launch
- 5 oriented GoPro Cameras record 1080p video
- Video virtual reality environment
- Protective housing shields cameras during splashdown





RockSat 2014 Payload



Student Flight Opportunities

- Gives students hands-on experience building payloads for space environment
- Students participate in rigorous NASA flight readiness review process
- Student participation in these programs have lead to internships and job opportunities at NASA and other Aerospace companies
- VSGC has been key to supporting these programs at Virginia Tech