2011 Workshop: CubeSats for GEM and CEDAR Science

Long title
Cross-cutting CEDAR/GEM Science enabled by tiny satellites, including CubeSats
CEDAR-GEM
Conveners
Gary Swenson
David Klumpar
Kristina Lynch
Therese Moretto-Jorgensen
Rick Doe
Charles Swenson
Bob Lin
Greg Earle
Description

Participants will weigh the scientific promise of tiny satellite technologies for ITM and Magnetospheric research and space weather applications. Short presentations of scientific mission concepts (proposed, and on-going) will be sought from the CEDAR and GEM communities with the aim of stimulating discussion of the broader applicability of CubeSats and related small free-flying platforms to revolutionize our science and vitalize our communities. Novel applications of "TinySats" will be especially encouraged, including missions to hard-to-reach regions, and the promise of swarm missions. Broad student participation will be vigorously sought.

Agenda

Wednesday, June 29th (1:30-3:30) – Where we are

1:30 Overview of NSF CubeSat program – Therese Moretto Jorgensen – (Introduction and kickoff by David Klumpar and Gary Swenson)

Introduction/overview and status of the NSF program 10-15 min include discussion of future selection opportunities and the type and availability of launches for NSF CubeSat missions)

1:50 A review of existing NSF Space Weather CubeSat missions by teams. A four or five slide status update for each that is given in less than 3 min. – (Introduction and lead by David Klumpar and Gary Swenson)

RAX overview of flight results – Jami Cutler or SRI (update 5 min)

FireBird –Harlan Spence or David Klumpar (update 2 min)

FireFly – Doug Roland (update 2 min)

DICE – Jeff Crowley (update 2 min)

Colorado SSWE – Xinlin Li (update 2 min)

Cinema – Thomas Immel (update 2 min)

'New One' – Aaron Ridley (update 2 min)

2:15 Frequency allocation and other community issues and update for CubeSats (15-20 min) – Rick Doe (lead discussion)

Erik Stromberg (460 to 470 MHz Band)

Discussion of the long term solutions being led by the NSF Spectrum Managers (Tomas Gergely or Therese Moretto or Rick Doe)

2:45 other items brought forward by workshop participants (45 min – perhaps more structure needed) (Introduction and lead by Greg Earl and Rick Doe)

Thursday, June 30th (10:00-noon) – Where we are going

10:00 Discussion of constellation and multi-point missions for the space environment inspired or enabled by CubeSats – (Introduction and Lead by David Klumpar, Gary Swenson, Greg Earl)

GeoScan- Lars Dyrud (10 min)

Overview of the GEOScan concept for the community and provide an overview of the kinds of small space weather instruments that have been discussed as part of GEOScan that might have application to future CubeSat missions.

QB50 – Scott Palo (15 min)

Overview of the QB-50 mission and the potential for US institutions to contribute to this European lead mission.

ICES – Chad Fish (15 min)

Overview of the ISS CubeSat Ejection System Concept and the NSF systems engineering study of the feasibility of using the ISS as a launch platform for studying the lower ionosphere-thermosphere. Discussion of potential opportunity for community use of this concept.

Geo Transfer Orbits – Larry Kepko (10 min)

Overview of using CubeSats to study the magnetosphere by making use of secondary payload in Geosynchronous Transfer Disposal Orbits.

CADRE and ARMADA – Aaron Ridley

Overview of the ARMADA CubeSat space weather constellation concept. (10 min)

11:15 Open discussion or a panel discussion on important science questions that can be addressed by CubeSat missions or constellations (45 Min - perhaps more structure needed) – (Introduction and discussion to be led by Kristina Lynch and Thomas Immel)

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