

Virtual Telescope Demonstration Satellite Mission

By: Neerav Shah

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ABSTRACT: NASA GSFC has interest in satellite missions featuring formation-flying to achieve revolutionary leaps in science imaging. For example, imaging the solar corona in high energies, imaging the event horizon of black holes in high energies, and searching for exo-planets is made possible by flying two spacecraft in precise alignment separated by 1 to thousands of km. Requirements for these missions vary however the necessary technological advances needed are the same: an on-target alignment camera to provide measurement of the multi-point alignment of two spacecraft with the celestial source; and an overall system demonstration showing the formation flying is feasible. The recent advances in relatively inexpensive nano-satellites, known as "CubeSats" opens the space to develop and demonstrate prototype formation alignment technologies at much lower cost than it would require for a full-scale mission demonstration. Therefore recent efforts have involved advanced satellite mission concepts featuring CubeSats. Neerav is the PI for the Virtual Telescope Demonstration Mission that features two CubeSats on-target inertially-aligned with a celestial source. This mission concept has the potential to create a gargantuan telescope, with a mirror and detector separated by hundreds of kilometers.

BIOGRAPHY: Neerav Shah is a Research Engineer at NASA GSFC, focusing on advanced Guidance, Navigation, and Control (GN&C). He has worked on the Lunar Reconnaissance Orbiter (LRO) and the Magnetospheric MultiScale (MMS) Missions. Neerav has over a dozen publications. Neerav began his career at NRL as a co-op. Interests include: satellite attitude control systems, formation flying, vision systems, swarm robotics and STEM educational outreach.



EVENT DETAILS

DATE:

Friday, February 20, 2015

TIME:

3:00 PM

LOCATION:

Babbio 104
Stevens Institute of
Technology

ATTENDANCE:

Public

