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Louisiana State University
Baton Rouge, Louisiana 70803-4001

WEEKLY CALENDAR

November 30, 2009

Departmental Colloquium

"Small Satellite to Problems in Near-Earth Space Science"

3:40 PM, December 3, 2009
109 Nicholson Hall

Gregory Earl

University of Texas-Dallas

Host: Juhan Frank

• *Refreshments served at 3:15 PM in 232 (Library) Nicholson Hall* •

Interactions between the co-located "oceans" of ionized and neutral gas that surround the Earth create a host of interesting phenomena that have real-world consequences for satellite and terrestrial communication and navigation systems. These gaseous media and the physics governing their behavior have been studied over the last 50 years using a combination of rocket probes, satellites, radars, and computational modeling. These previous missions have been limited in scope due to the high cost of spaceflight; as a result our knowledge of the near-Earth space environment is based almost entirely on measurements that cannot adequately separate spatial and temporal causes and effects. Recent developments in the micro-satellite arena are beginning to change this by making it feasible to launch suites of satellites that make simultaneous measurements at many locations around the Earth. These developments are poised to revolutionize space science.

In this talk the promise and challenges associated with these new microsatellite ventures are described and set in the context of the current "big problems" in space science. Universities have a significant part to play in these new state-of-the-art endeavors, with clear roles for students. Examples of ongoing research at the University of Texas at Dallas will be used to highlight a number of these areas, and will reveal some research avenues leading to rewarding career opportunities in aerospace industries.



The recently launched C/NOFS satellite contains seven science instruments (2 from UT-Dallas).

Publications:

"Optical transparency of graphene as determined by the fine-structure constant," **Daniel E. Sheehy** and Jorg Schmalian, Physical Review B80, 193411 (2009).