



**THE EMRSSS AREA SEMINAR
(EE 500 GRADUATE COLLOQUIUM)
Fall 2009**

You are cordially invited to

The EMRSSS Area Seminar

Entitled

**“CARE: VHF Radar Observations from Bermuda
to Rocket Launch”**

By

Prof. Julio V. Urbina

From

**Department of Electrical Engineering
The Pennsylvania State University**

The talk will take place on

October 20, 2009

4:00 pm

At

225 EE West Building

Talk Abstract:

This talk will provide an overview of the Sounding Rocket Charged Aerosol Release Experiment (CARE) that aimed to study noctilucent clouds, also known as polar mesospheric clouds (PMCs). These clouds are found in the upper atmosphere as spectacular displays that are most easily seen just after sunset. The formation and evolution of PMCs have been observed for the past 100 years primarily in the summer months at latitudes between 50° and 70° north and south of the equator. One novel feature of PMCs is that they scatter radar signals that produce polar mesospheric summer echoes (PMSEs). The natural noctilucent clouds are the highest clouds in the Earth's atmosphere, located in the mesosphere at altitudes of around 80 km. They are normally too faint to be seen, and are visible only when illuminated by sunlight from below the horizon while the Earth's surface is in darkness. The occurrence and radar scatter properties of noctilucent clouds are not fully understood. We will discuss the results of the experiment, including the installation and operation of the Penn State VHF Radar in the island of Bermuda.

Speaker's Bio:

Dr. Julio V. Urbina received his B.S. degree from Universidad Nacional de Ingenieria in Lima, Peru in 1990 and his Ph.D. degree in Electrical Engineering from the University of Illinois at Urbana-Champaign in 2002. Dr. Urbina worked as an RF and Digital Engineer at the Jicamarca Radio Observatory in Peru from 1989-1993, and as faculty at University of Arkansas at Little Rock from 2002-2006. He also worked as a Visiting Scientist in the Space and Atmospheric Sciences group at the Arecibo Observatory in the summers of 2005 and 2006. In August 2006, he joined Penn State where he is currently an Assistant Professor. Dr. Urbina has developed several radar technologies and applied these technologies to pursue scientific investigations in the Earth's middle and upper atmosphere. He has published over thirty refereed journal papers and conference proceedings. His recent research interests lie on space science, digital systems and space instrumentation, cognitive radars, sensors, acquisition and morphware systems, meteor science, radio wave remote sensing, and radar studies of the atmosphere and ionosphere. Dr. Urbina is member of IEEE, AGU, URSI, ASEE, and Phi Kappa Phi.