THE EMRSSS AREA SEMINAR

(EE 500 GRADUATE COLLOQUIUM)

Fall 2009

You are cordially invited to

The EMRSSS Area Seminar

Entitled

"Radar Observation of Meteor Generated Plasmas: Understanding the Impacts of Billions of Sand and Dust Sized Meteoroids"

By

Dr. Lars Dyrud

From

Johns Hopkins University

Applied Physics Laboratory, Laurel, VA

The talk will take place on

Nov 3, 2009
4:00 pm

At

225 EE West Building

Talk Abstract:

Over 100 kilotons of meteoric material hits the Earth every year, yet the average mass, velocity (15-55 km/s), and chemical composition of the particles comprising this mass flux remain poorly constrained. This is because the vast majority of this flux is composed of particles of micron size that are no larger than a grain of sand or piece of dust. Such micro-meteoroids traditionally do not reach the ground becoming meteorites, and their trails are so dim that they are invisible to most optical systems. However, trails produced from micro-meteoroids generate 10^{14} or more free electrons at altitudes near 100 km, representing substantial enhancements to the natural ionosphere which presents a comparatively large radar cross section. This seminar will focus on the plasma processes that occur during meteor trail production and evolution and the associated radar reflections that occur during each stage of evolution. Our goal is that by understanding the plasma physics and radar reflection of meteor plasmas, we may provide answers regarding the meteor flux, its influence to the upper atmosphere and ionosphere, and its relation to planetary astronomy and the dangers posed to manned and unmanned space flight.

Speaker's Bio:

Dr. Lars Dyrud received his BA from Augsburg College in Minneapolis, MN in 1997, and was a Fulbright scholar at the University of Oslo before receiving an MA and Ph. D. in 2003 from Boston University. After graduation he received a National Science Foundation CEDAR Fellowship, is a Post-Doctoral Fellow at the Norwegian National Academy of Science Center for Advanced Study, and a recipient of the International Union of Radio Science Young Scientist Award. As a professional, he has acted as PI on grants and contracts from NSF, DOE and NASA, and is a reviewer for numerous journals from Earth Moon and Planets to Radio Science. He has first authored over 20 articles and journal publications. He recently joined Johns Hopkins Applied Physics Laboratory and his interests include meteors, space and plasma physics, GPS, radar and ionospheric scintillation processes.