

HAO Colloquium Series

(Refreshments served)

Speaker: Thiago Brito, LASP/University of Colorado

Time: 1:30–2:30 pm

Date: Wednesday, October 30, 2013

Location: CG1 – 2126 (also webcast at
<http://www.fin.ucar.edu/it/mms/cg-live.htm>)

Title: Precipitation and energization of relativistic radiation belt electrons induced by ULF oscillations in the magnetosphere.

Abstract:

There is a renewed interest in the study of the radiation belts with the recent launch of the Van Allen Probes satellites. The mechanisms that drive the global response of the radiation belts to geomagnetic storms are not yet well understood. Global simulations using magnetohydrodynamics (MHD) model fields as drivers provide a valuable tool for studying the dynamics of these MeV energetic particles. ACE satellite measurements of the MHD solar wind parameters are used as the upstream boundary condition for the Lyon-Fedder-Mobarry (LFM) 3D MHD code calculation of fields, used to drive electrons in 2D and 3D test particle simulations. In this talk, I will discuss simulations that were performed to investigate energization and loss of energetic radiation belt electrons. The response of the radiation belts to a CME-shock driven storm on January 21, 2005 during the MINIS balloon campaign was investigated, focusing on precipitation mechanisms by which Ultra Low Frequency (ULF) waves influence the radiation belt population. ULF wave modulation of MeV electron precipitation loss to the atmosphere has been reported in this and other balloon-borne measurements of X-ray bremsstrahlung.