BOSTON UNIVERSITY

SPACE PHYSICS SEMINAR

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AE9, AP9 and SPM: New Models for Radiation Belt and Space Plasma Specification

725 Commonwealth Ave.
Thursday, January 17, 2013
Refreshments at 3:30pm in CAS 500
Talk begins at 4:00pm in CAS 502

Abstract:
A new set of models for the flux of particles in the Earth's inner magnetosphere has been developed for use in space system design and other applications which require a climatological specification. Denoted AE9, AP9, and SPM for energetic electrons, energetic protons and space plasma, respectively, the models comprise 30 independent data sets measured by satellite on-board sensors. These data sets have been cleaned, cross-calibrated and statistically combined in a novel manner to create maps of the particle fluxes together with estimates of uncertainties due to both imperfect measurements and space weather. Furthermore, an auto-regressive time-evolution model constructed from temporal and spatial correlations permits the Monte-Carlo estimation of the time evolution of fluxes and derived quantities, e.g. the median and 95th percentile, along an arbitrary orbit. An overview of the model functionality, architecture, algorithms, data sets and validation will be presented.