Space Physics Seminar

Thursday, April 13, 2017

Radial Diffusion and Decay of Energetic Electrons in Earth's Outer Radiation Belt and Slot Region

Qianli Ma

Boston University

The radiation belt electron evolutions are mostly controlled by the source from radial diffusion transport and the pitch angle scattering loss by magnetospheric waves during non-storm periods. The Van Allen Probes measurements have provided detailed description about the radiation belt evolution and structure, including the inward intrusion of several MeV electrons in the outer radiation belt and several hundred keV electrons in the slot region, the decay of the energetic electrons during their inward transport, and the 'S-shaped' radiation belt structure formed following the electron decay. Our radiation belt simulation reproduces these essential features. The recent radial diffusion model provides reasonable estimates on the radial intrusion timescale of energetic electrons. The wave-induced electron decay timescales and pitch angle distributions are consistent with the Van Allen Probes observations over multiple energy channels. In addition, the energy-dependent electron scattering due to plasmaspheric hiss leads to the formation of 'S-shaped' electron flux contours across the radiation belts.

C·S·P

4:00pm in CAS 502. *Refreshments served at 3:45pm in CAS 500.*

BOSTON UNIVERSITY

Center for Space Physics
725 Commonwealth Avenue
617-353-5990
http://www.bu.edu/csp/edoutreach/seminar/

Next Week

Run Shi

Boston University