

PEM027-10

Room: Function Room B

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## Geospace Exploration Mission: ERG

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The flux variation of the outer radiation belt is a result of delicate balance between acceleration and loss mechanisms. Two different ideas that drive net flux enhancement of the outer belt have been proposed. In the external source process, the radial diffusion is essential to produce the flux enhancement via betatron acceleration. On the other hand, in the internal acceleration process, the acceleration via wave-particle interaction takes place inside the radiation belts, and plasma/particles from eV to more than MeV couple with each other via wave-particle interactions. That is, such cross-energy coupling process is essential to produce relativistic electron acceleration. Direct observations of plasma/particles as well as field and waves are critical to identify and understand the acceleration mechanisms.

In order to investigate the acceleration process of relativistic particles in the radiation belts as well as global dynamics of geospace, we are proposing the ERG (Energization and Radiation in Geospace) project. The ERG satellite will be launched in FY2013-2014. The planned apogee altitude is about 4 Re to measure the heart of the outer radiation belt, and the mission life will be longer than 1 year. The ERG satellite is currently designed to carry a comprehensive set of particle from 10 eV to more than 10 MeV, and field/wave instruments that can measure wide energy and frequency ranges. The project consists of not only the satellite team but also ground network team and integrated data analysis team. Moreover, there are science coordination team and project science center team to gain the science output. In this presentation, we will review several acceleration mechanisms of relativistic electrons in the radiation belts, and talk about the overview and the current status of the ERG project.

Keywords: radiation belts, small satellite program, geospace exploration