

Survey of radiation belt low-energy electron fluxes based on the ERG LEP-e measurements

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The Exploration of energization and Radiation in Geospace (ERG) satellite, which is led by Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency (JAXA), has observed the Earth's radiation belts for several months. Through years of efforts, Taiwan team successfully delivered the low-energy particle experiments - electron analyzer (LEP-e) for deployment on the ERG satellite. In Taiwan, the project is led by Academia Sinica Institute of Astronomy and Astrophysics (ASIAA) in partnership with National Cheng Kung University (NCKU). The LEP-e instrument measures a 3-D velocity distribution function of low energy electrons ranging from ~20 eV to 19 keV. We provide an overview of electron fluxes within the radiation belts using the LEP-e instrument data obtained in the past months. The L-shell plots are made upon 100 eV, 1 keV and 10 keV, respectively, to display the electron flux in various L-shells measured by the ERG satellite. The enhancement of the electron fluxes is found to show correspondence with the increase of ring current intensity. These electrons are found to migrate inwards as the ring current increases. We also investigate the 3-D distribution of the electron fluxes and discuss the contribution of the energetic electrons to the ring current.