High energy Electron exPeriment (HEP) onboard the ERG satellite

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The Exploration of energization and Radiation in Geospace (ERG) satellite was successfully launched on December 20, 2016, and now explores how relativistic electrons in the radiation belts are generated during space storms. ”High energy Electron exPeriment (HEP)” onboard the ERG satellite observes 70 keV - 2 MeV electrons

and provides three-dimensional velocity distribution of electrons every spacecraft spin period. Electrons are observed by two types of camera designs, HEP-L and HEP-H, with regard to geometrical factor and energy range. HEP-L observes 0.1 - 1 MeV electrons and its geometrical factor is 10^{-3} cm^2 str, and HEP-H observes 0.7 - 2 MeV and G-factor is 10^{-2} cm^2 str.

HEP-L and HEP-H each consist of three pin-hole type cameras, and each camera consist of mechanical collimator, stacked silicon semi- conductor detectors and readout ASICs. HEP-H has larger opening angle of the collimator and more silicon detectors to observe higher energy electrons than HEP-L.

The initial checkout in orbit was carried out in February 2017 and it was confirmed that there was no performance degradation by comparing the results of the initial checkout in orbit and the prelaunch function tests. Since late March, HEP has carried out normal observation.

In this presentation we introduce the HEP instrument design, prelaunch tests results and report the initial results in orbit.