

0.01-25keV/q ion mass spectrometer (LEPi) to be onboard ERG spacecraft

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We are developing a low-energy ion mass spectrometer to be onboard ERG spacecraft. ERG is a scientific spacecraft which explores dynamics of terrestrial radiation belt. LEPi is one of the particle instruments onboard ERG. Its energy range (0.01-25keV/q) covers ions which are believed to play a significant role on excitation of magnetosonic waves and EMIC waves in the radiation belt. However, measurements of plasma particles with energies lower than 100keV is not easy in the terrestrial radiation belt, since fluxes of high-energy particles are large. High-energy particles can penetrate through, or kick out the secondary particles when they hit materials. This means they can be detected by a detector inside an instrument without any analysis, namely, noise. In order to reduce the noise generated by the high-energy particles, we apply a time-of-flight (TOF) technique. In addition, we try to minimize size of the detector. We will present performance of LEPi and status of flight model fabrication.