

Development of 0.01-25keV/q ion mass spectrometer (LEPi) for ERG spacecraft

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We are developing a low-energy ion mass spectrometer (0.01-25keV/q) to be onboard ERG spacecraft. Measurements of plasma particles with energies lower than 100keV is not easy in the terrestrial inner magnetosphere, 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 discuss how an instrument in the current design can survive under severe environment under terrestrial inner magnetosphere.

Keywords: low-energy plasma analyzer, mass spectrometer, ERG