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Development of 0.01-25keV/q ion mass spectrometer for inner magnetospheric reserach

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Measurements of plasma partciles with energies lower than 100keV is not easy in the terrestrial 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. We are developping an ion energy-mass spectrometer with energy range of 0.01-25keV/q for terrestrical inner magnetosphere. 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 like terrestrial inner magnetosphere.

Keywords: plasma particle instrument, terrestrial inner magnetosphere, ERG