

ESA(Electro-Static Analyzer) on the KAISTSAT-4

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The mission of ESA on board KAISTSAT-4 satellite is to investigate plasma processes occurring in the low altitude auroral acceleration region, where magnetic field-aligned currents couple global magnetospheric current systems to the high latitude ionosphere. Geomagnetic field lines can guide energetic electrons and protons from magnetosphere to ionosphere. Precipitating particles lose their energy via collisions with neutral particles and ionize neutral particles at 80 ~ 300km. Some of atmospheric constituents can be excited to higher energy levels. This can lead to the formation of auroral light. Because the electrons with energy 5eV - 20keV are main particles forming aurora, it is necessary to observe these particles with special instrument like top hat electrostatic analyzer (ESA) in order to understand plasma process in auroral region. Top hat type ESA is designed to provide rapid measurements of particle distribution functions with good phase space resolution. ESA shall sample the particles distribution as often as every 50msec with 14° × 180° field of view.