

R005-03

B会場：11/4 PM1 (13:45-15:30)

14:15~14:30

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Plasma wave and DC electric field observations by the SS-520-3 sounding rocket

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The SS-520-3 sounding rocket experiment was planned to clarify the ion outflow phenomenon in the polar cusp region. Heating/acceleration transverse to the geomagnetic field lines is known as one of the acceleration processes for obtaining the velocity for the ions to flow out, and the wave-particle interaction is considered the primary mechanism of the heating/acceleration. For this reason, an instrument for DC electric field and plasma waves, called Low-Frequency wave Analyzer System (LFAS) is on board the SS-520-3. LFAS is composed of three blocks: electric field sensors (LFAS-S), pre-amplifiers (LFAS-Pre), and receivers. LFAS has two types of receivers with different observation bands: Electric Field Detector (EFD) covers DC and the ELF range (DC – 400 Hz), and WaveForm Capture (WFC) covers the VLF range (10 Hz – 10 kHz). In addition, WFC has Software Wave-Particle Interaction Analyzer (SWPIA) to measure wave-particle interaction directly. SWPIA generates clock signals for synchronous observation between plasma wave and particle. The signal is sent to two particle instruments: Thermal and Supra-thermal ion energy-mass Analyzer (TSA) and low-energy Ion energy-Mass Spectrometer (IMS). The sounding rocket was launched on 4th November 2021 from Ny Alesund, Spitsbergen, Norway. During the flight, two receivers of LFAS including SWPIA were successfully worked. However, problems with LFAS-S caused two of the four sensor elements to not extend and one to extend later than scheduled. As a result, LFAS observed the electric field in an orthogonal monopole configuration. In the presentation, we will show the detailed design and the initial result of LFAS.