

R006-24

Zoom meeting B : 11/1 PM2 (15:45-18:15)

17:45~18:00

Possible observation plans for high-energy analyzer (PINO) onboard a CubeSat (BIRDS-5)

#Iku Shinohara¹⁾, Takefumi Mitani²⁾, Mariko Teramoto³⁾, Kazushi Asamura¹⁾, Ryota Onogi¹⁾, Yumie Kawagoe¹⁾, Takeshi Takashima⁴⁾

⁽¹⁾JAXA/ISAS, ⁽²⁾JAXA/ISAS, ⁽³⁾Kyutech, ⁽⁴⁾JAXA/ISAS

We are developing a compact high-energy electron analyzer, nicknamed PINO (Particle Instrument for Nano-satellite), thanks to the JSPS KAKENHI support and the collaboration with the Kyushu Institute of Technology. PINO will be installed on a 2-U CubeSat, BIRDS-5J, and the EM (Engineering Model) integration test of BIRDS-5 fleets (two 1U CubeSats and one 2U CubeSat) are going in this summer. After the critical design review based on the results of the EM test, we will soon start to build the FM (Flight Model) of PINO by refurbishing PINO-EM. The BIRDS-5 satellites will be ready for launch by next January. They will be released from the international space station (ISS) in Spring 2022.

Since the orbit of the BIRDS-5 fleets is almost the same as ISS, the coverage of the Lm-value is not comprehensive, and the maximum value is less than 7. The satellite attitude is controlled by the magnetic torque of the permanent magnets, and the PINO sensor view is always directed toward almost anti-parallel to the geomagnetic fields. Thus, PINO can observe precipitating high-energy electron fluxes in the northern hemisphere. Due to the electrical power budget limit, we will turn on PINO only for continuous 5 minutes in an orbital revolution. We will focus the PINO observation on conducting simultaneous observations of precipitating high-energy electrons from the outer radiation belt at low and high altitudes. Actually, we found that the conjunction between BIRDS-5 and Arase (ERG) will occur almost once in 3 days at various Lm positions. In this presentation, we will present our present status of the PINO development and current plans of scientific observations.