

[☞AT-11] System Design of SIGMA(KHUSAT-3) CubeSat Mission

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Kyung Hee University has been developing a CubeSat for the space science mission called SIGMA (Scientific cubesat with Instrument for Global Magnetic field and rAdiation), which includes TEPC (Tissue Equivalent Proportional Counter) and a magnetometer. SIGMA has a 3-unit CubeSat, and the weight is about 3.2 kg. The main payload is TEPC which can measure the Linear Energy Transfer (LET) spectrum and calculate the equivalent dose for the complicated radiation field in the space. The magnetometer is a secondary payload using a miniaturized fluxgate magnetometer. We expect it to have a 1 nT resolution in the dynamic range of ± 65535 nT. An Attitude Control System (ACS) spins the SIGMA spacecraft 4 rpm with the spin axis perpendicular to the ecliptic plane. Full duplex communication is consists of VHF uplink and S-band and UHF downlink. In this paper, we introduce the system design and the scientific purpose of the SIGMA CubeSat mission.

[☞AT-12] First Light Results of IGRINS Instrument Control Software

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IGRINS (Immersion GRating Infrared Spectrograph) is a high spectral resolution near-infrared spectrograph that has been developed in a collaboration between the Korea Astronomy & Space Science Institute and the University of Texas at Austin. By using a silicon immersion echelle grating, the size of the fore optics is reduced by a factor of three times and we can make a more compact instrument. One exposure covers the whole of the H- and K-band spectrum with $R=40,000$. While the operation of and data reduction for this instrument is relatively simple compared to other grating spectrographs, we still need to operate three infrared arrays, cryostat sensors, calibration lamp units, and the telescope during astronomical observations. The IGRINS Instrument Control Software consists of a Housekeeping Package (HKP), Slit Camera Package (SCP), Data Taking Package (DTP), and Quick Look Package (QLP). The SCP will do auto guiding using a center finding algorithm. The DTP will take the echellogram images of the H and K bands, and the QLP will confirm fast processing of data. We will have a commissioning observations in 2014 March. In this poster, we present the performance of the software during the test observations.