a part of the space-core technology project, the goal is to develop the engineering models of them. Currently mechanical and electronic parts of LIRS are ready to assemble, and proto-models for GRS and NS are developed. Main sensors, such as IR sensor and HPGe sensor are delivered and tested. In addition, three instruments are successfully designed to satisfy the required mass, and power budget for spacecraft. In this paper, we will briefly present the current status in development of the instruments and the plan for the next year.

10:00 [I-2-3]

Multi-band polarimetry of the lunar surface. II. Polarization phase curve

Sukbum A. Hong[1], Minsup Jeong[2], Sungsoo Kim[1], Chae Kyung Sim , Yuriyg Shkuratov[3], Il-Hoon Kim[1], Kilho Baek[1], Young-Jun Choi

[1]*Kyung Hee University*
[2]*Korea Astronomy and Space Science Institute*
Astronomical Institute of Kharkov V. N., Karazin National University, Kharkov 61022, Ukraine

The maximum-polarization map of whole near-side Moon has been constructed for the first time. Since the degree of polarization depends on the phase angle, the polarimetric observation is objectively expressed with the maximum-polarization. The maximum-polarization can be estimated from the degree of polarization with several phase angles using best-fit to the empirical function of phase curve. The maximum-polarization maps have been constructed with multiple parameters best-fit and then has been compared with the results from the fixed parameters best-fit. The relationship between multiple parameters best-fits and fixed parameters best-fit is strongly correlated that suggests the fixed parameters best-fit can replace the multiple parameters best-fit. In addition, the maximum-polarization can be estimated with lower phase angle (α > 90°) sets. We confirm the simplified method to construct the maximum-polarization of surface of Moon, which can be applied to future space mission whether the observations are incomplete or with a large uncertainty. Polarimetric observations will be performed for the first time by the Korea Pathfinder Lunar Orbiter (KPLO). This study have been preliminarily studied for the successful performance of the KPLO.

10:15 [I-2-4]

Development of KMAG engineering model

Hyojeong Lee[1], Ho Jin , Jehyuck Shin , Jung-Kyu Lee , Seongwhan Lee[1,2], Dukhang Lee , Seungah Lee , Mangyu Lee[1], Sihyung Lee[1], Yu-Sung Jang , Derac Son[3], Eunae Kim

[1]*Kyung Hee University*
[2]*Intorule Inc.*
Sensorpia Co.

KPLO-Magnetometer (KMAG) is a scientific payload of Korea Pathfinder Lunar Orbiter (KPLO) that is the first lunar exploration mission of Korean space program. KMAG has three triaxial fluxgate magnetometers to measure DC magnetic fields on the lunar surface. To minimize magnetic disturbance generated from the spacecraft, we use multi-sensing technique with three magnetometers which are installed at different positions inside a boom. KMAG is composed of Magnetometer (MAG) unit and Fluxgate magnetometer Control Electronics (FCE) unit. We had carried out electrical function test without the boom deployment, environmental test and magnetometer calibration with KMAG Engineering Model (EM). In Total Ionizing Dose (TID) test, we found some problems of few devices but there is no critical issue in thermal-vacuum test. In this development stage, we find the total mass and electric power consumption of the KMAG EM is 3.5 kg and 3.6 watt, respectively.

10:30 [I-2-5]

Mission analyses for wide-angle Polarimetric Camera; PolCam

Minsup Jeong[1], Young-Jun Choi[1,4], Sungsoo S. Kim[2], Kyung-In Kang[3], Chae Kyung Sim[2], Il-Hoon Kim , Kilho Baek[2]

[1]*Korea Astronomy and Space Science Institute*
[2]*Kyung Hee University*
Korea Advanced Institute of Science and Technology
[4]*University of Science and Technology*

Wide-Angle Polarimetric Camera (PolCam) is one of payloads for Korean Pathfinder Lunar Orbiter (KPLO). The mission objectives of PolCam are to construct maps of polarization and reflectance ratio. PolCam will be performed at three pass-bands (320, 430 and 750 nm) and four polarization directions (0°, 60°, 90°, 120°). To achieve the success of mission objectives, we simulate the observation of PolCam in the Moon orbit. We analyze the phase-angle coverage, resolution, light flux, dynamic range, and image compression rate of the simulated data. We will present the current development status and the operation scenario of PolCam.

10:45 [I-2-6]

Study of lunar magnetic anomaly using magnetometer and electron reflectometer

Seul-Min Baek[1], Khan-Hyuk Kim[1], Ho Jin , Ian Garrick-Bethell

[1]*School of Space Research, Kyung Hee University*
[2]*Earth and Planetary Science, UC Santa Cruz*

Low-altitude Lunar Prospector magnetometer (LP-MAG) data shows that mare Crisium has two magnetic anomalies, which are distributed near the inner northern and southern edges in the Crisium basin. The Crisium northern anomaly (CNA) shows a circular well-isolated magnetic field structure. Unlike CNA, CSA has a longitudinally elongated pattern, indicating that CSA consists of more complicated source than CNA. The CSA shows BN-bipolar and BR-monopolar perturbations in the western part of the anomaly (CSA1). In the eastern part (CSA2), however, the polarities change to a BN-monopolar and BR-bipolar perturbations. This implies that CSA consists of two magnetic sources with different directions. We estimate the moment directions and depths