

Search for lunar polar ice by Spectral Profiler onboard SELENE

Ryosuke Nakamura[1]; Tsuneo Matsunaga[2]

[1] JAXA; [2] NIES

Lunar Prospector neutron data have implied the existence of the lunar polar ice in the permanently-shadowed areas (PSAs) at high latitudes. If we definitely confirm the existence, the significance lies not only in the lunar science but also in the future utilization. PSAs are not completely dark, but illuminated by the scattered light from the ambient sunlit areas. The absolute brightness can be calculated by using the realistic models of the craters shape and the scattering properties. The actual sensitivity of SP flight model has been evaluated from the pre-launch radiometric calibration data. Combining the two results, we demonstrate that SP can detect the very faint spectroscopic signatures from the possible surface frosts in the PSAs. Furthermore, we suggest to effectively integrate the SELENE data provided by other instruments, such as LALT,LRS,TC,GRS in order to investigate their spatial distribution in detail.