fundamental mechanisms for the activities.

A sudden activity of (6478) Gault was reported in early 2019. The asteroid was discovered in 1988 and has exhibited its inactive appearance until the end of last year. Soon after the report, we have conducted imaging observations using the Seoul National University Observatory 1.0-m telescope and the Korea Microlensing Telescope Network (KMTNet) to monitor the activity. The observed images showed a primary dust tail that consists of dust grains ejected early November in 2018. Later, another tail developed, indicating further dust ejection occurred around late December 2018. Our model simulation to reproduce the morphology of the dust cloud suggests that the slightly-curved primary dust tail results from a continuous dust ejection over weeks. The total mass of ejecta was estimated to XX kg (XX% of the asteroid mass). Such continuous dust ejection for the inner active asteroids was unexpected because ice might have already sublimated from subsurfaces of inner main belt. Based on our observational evidence, we will discuss how inner asteroids are activated and eject dust continuously.

[구 KP-04] Thermal Radiation Pressure Force on Atmosphereless Bodies

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Thermal fracture and cracking near the perihelion are found to be a possible mechanism to produce the dust trail of the near-Earth asteroid, (3200) Phaethon (Jewitt and Li, 2013, ApJ 771, L36). It is, however, not well understood how the debris particles were escalated from the regolith against the asteroid's gravity. Thus, the scenario that these debris particles are responsible for the detected activities (Li and Jewitt, 2013, ApJ, 145, 154), is not complete yet. Here, we hypothesize that the thermal radiation pressure around the perihelion passage would exert substantial force outwards from the regolith on dust grains, and they can be lifted up and contributes the dust tail formation with further help of solar radiation pressure. Our modeling indicates that particles with sizes of roughly ~1-10 micron can be ejected from Phaethon by the mechanism, while a detailed model of gravitational field is required for accurate estimation of the particle size range. Our idea is not necessarily limited to Phaethon case, but is applicable to any atmosphereless bodies.

[구 KP-05] Polarimetry of solar system small bodies using the Seoul National University 61cm telescope and TRIPOL

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It is known that lights scattered by comets and asteroids are partially polarized. From polarimetric observations of those objects, we can investigate physical properties, such as albedos, sizes of cometary dust particles and regolith of asteroids. Since the polarization degrees of those objects highly depend on their phase angles (Sun-object-observer's angles), long-term monitoring observations are required. Moreover, comets show unforeseeable activations (i.e., outbursts) which need follow-up observations to understand the mechanism. In order to realize such monitoring and transient observations, we installed the Triple-Range Imager and POLarimeter (TRIPOL) on the 61cm telescope of Seoul National University (Hereafter, SNU) Gwanak campus. With this combination, we can obtain g', r', i' bands photopolarimetric images simultaneously with 8.0'×8.0' field of view and pixel resolution of 0.94" pixel^{-1}.

Here, we make a presentation regarding the photometric and polarimetric performances of TRIPOL on the SNU 61cm telescope. In addition, we introduce initial polarimetric results of asteroid and comets with the instruments. First, we determine the limiting magnitudes (defined as magnitudes for S/N=5) of 15.17±0.06 (g'-band), 15.68±0.01 (r'-band), 16.24±0.03 (I'-band), respectively, with total 240-seconds exposure (four 60-seconds exposure images, each was taken at different rotation angle for the half-wave plate). Second, we found that the instrumental polarization is negligibly small, (-0.32±0.04% in the g', -0.36±0.05% in the r' and -0.21±0.04% in the i'-bands), while the polarization efficiencies are large enough to maximize the performance (i.e., 97.52±0.03% in the g', 98.83±0.02% in the r' and 99.15±0.02% in the i'-bands). With the instruments, we made observations of three Jupiter-family comets, 21P/Giacobini-Zinner, 38P/Stephan-Oterma, and 46P/Wirtanen and plan to obsㅊerve one near-Earth asteroid, (433) Eros, on a trial basis. Especially for comets, we discriminate signals from dust and gas to eliminate gas contamination, which are known to change observed degree of linear polarization, using multi-band images. We confirm that the phase angle dependency of these comets are consistent with previous observations, probably because