Deep Ecliptic Patrol of the Southern Sky (DEEP-South) observations have been conducted officially during the off-season for exoplanet search since October 2015. Most of the allocated time for DEEP-South is devoted to targeted photometry, Opposition Census (OC), of Near Earth Asteroids (NEAs) to increase the number of such objects with known physical properties. It is efficiently achieved by multiband, time series photometry. This Opposition Census (OC) mode target objects near their opposition, with km-sized PHAs in the early stage and goes down to sub-km objects. Continuous monitoring of the sky with KMTNet is optimized for spin characterization of various kinds of asteroids, including binaries, satellites, slow/fast- and non-principal axis-rotators, and hence is expected to facilitate the debiasing of previously reported lightcurve observations. We present the preliminary lightcurves of NEAs from year one of the DEEP-South with our long term plan.

[구 SS-08] A Possible Cause for the Cool Homopause of the 8-micron North Polar Hot Spot of Jupiter

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We have found cool homopause temperatures (Kim et al. 2016) of 180 - 250 K for the 8-micron North Polar Hot Spot (8NPHS) of Jupiter, which has been observed to be stationary at 180 deg (SysIII) longitude since the early 1980s. The 3-micron spectro-images of Jupiter that we analyzed were obtained with GNIRS, Gemini Near-Infrared Spectrograph at Gemini North on January 13, 2013(UT), and at 8 μm on Feburary 6, 2013(UT) with TEXES, the Texas Echelon Cross Echelle Spectrograph at the NASA IRTF. The cool homopause was unexpected, and a possible implication of the relatively cool 8NPHS homopause compared with those of other auroral regions will be presented.

[구 SS-09] A Study of Polarimetric Properties of Comet C/2013 US10 (Catalina) in Optical and Near-Infrared Wavelength Regions

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Polarization is a rich source of information on the physical properties of astronomical objects. In particular, scattered sunlight by optically thin media (e.g., cometary comae) shows linear polarization of light, which highly depends on the phase angle (an angle between the Sun-Comet-Earth), wavelengths, and physical properties of cometary dust particles such as size, composition, and structures. Here, we present a study of polarimetric properties of non-periodic comet C/2013 US10 (Catalina) in optical and near-infrared wavelength regions obtained from imaging, spectroscopy, and polarimetric observations taken on UT 2015 December 17 - 19 welcoming its (probably) first close approach to the Earth. In this presentation, we want to introduce our progress since the last Korean Astronomical Society meeting (at BEXCO, Busan, 2016 April 14 - 15) especially in terms of spatial variations of degree of linear polarization (DOLP) and its possible scenarios to explain the correlations with other observational results. In particular, we found that there is strong anti-correlation between the gas/dust flux ratio and DOLP at the cometocentric distance of (2 - 5) x 104 km. Besides, within 10 arcseconds in radii (corresponding to inner coma region of 104 km from the center), the inverse relationship of these two parameters does not hold anymore. We conjecture that the rapid outward increase of DOLP can be supported by either the sublimation/evaporation of icy volatiles, disaggregation of cometary dust particles ejected from the nucleus, and/or difference of dominant dust particle sizes. From our results, we can conclude that comet C/2013 US10 (Catalina) corroborates rather indefinite traditional classification of poalrimetric classes of comets, and provides good opportunity to study less processed material which probably cherishes its memory at the formation epoch of the Solar System.

[구 SS-10] Thermal Modeling of Comet-Like Asteroids from AKARI Observation

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