for unpredictable events or targets of special interests. Different exposures with such different modes result in a wide range of background noise level, the number of background stars and the mover's projected speed in each image. The Moving Object Detection Program (MODP) utilizes multiple mosaic images being taken for the same target fields at different epochs at the three KMTNet sites. MODP employs existing software packages such as SExtractor (Source-Extractor) and SCAMP (Software for Calibrating Astrometry and Photometry); SExtractor generates object catalogs, while SCAMP conducts precision astrometric calibration, then MODP determines if a point source is moving. This package creates animated stamp images for visual inspection with MPC reports, the latter for checking whether an object is known or unknown. We evaluate the astrometric accuracy and efficiency of MODP using the year one dataset obtained from DEEP-South operations.

[구 HS-05] DEEP-South: A New Taxonomic Classification of Asteroids

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Asteroid taxonomy dates back to the mid-1970's and is based mostly on broadband photometric and spectroscopic observations in the visible wavelength. Different taxonomic classes have long been characterized by spectral slope shortward of 0.75 microns and the absorption band in 1 micron, the principal components. In this way, taxonomic classes are grouped and divided into four broad complexes; silicates (S), carbonaceous (C), featureless (X), Vestoids (V), and the end-members that do not fit well within the S, C, X and V complexes. The past decade witnessed an explosion of data due to the advent of large-scale asteroid surveys such as SDSS. The classification scheme has recently been expanded with the analysis of the SDSS 4th Moving Object Catalog (MOC 4) data. However, the boundaries of each complex and subclass are rather ambiguously defined by hand. Furthermore, there are only few studies on asteroid taxonomy using Johnson-Cousins filters, and those were conducted on a small number of objects, with significant uncertainties. In this paper, we present our preliminary results for a new taxonomic classification of asteroids using SMASS, Bus and DeMeo (2014) and the SDSS MOC 4 datasets. This classification scheme is simply represented by a triplet of photometric colors, either in SDSS or in Johnson-Cousins photometric systems.

[구 HS-06] DEEP-South: The Photometric Study of Non-Principal Axis Rotator (5247) Krylov

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The number of discovery of asteroids with peculiar rotational states has recently increased, and hence a novel approach for lightcurve analysis is considered to be critical. In order to investigate objects such as Non-Principal Axis (NPA) rotator, we selected a NPA candidate, (5247) Kryolv as our target considering its Principal Axis Rotation (PAR) code and the visibility in early 2016. The observations of Krylov were made using Korea Microlensing Telescope Network (KMTNet) 1.6 m telescopes installed at the three southern sites with TO (Target of Opportunity) observation mode. We conducted R-band time-series photometry over a total of 51 nights from January to April 2016 with several exposures during each allocated run. The ensemble normalization photometry was employed using the AAVSO Photomtric All-Sky Survey (APASS) catalog for the standardization. We successfully confirmed its NPA spin state based on the deviation from the reduced lightcurve, and thus Krylov is recorded as the first NPA rotator of its kind in the main-belt, with its precession and rotation periods, P_φ= 81.18 h and P_Ψ= 67.17 h, respectively. In this paper, we present the spin direction, the 3D shape model and taxonomy of the newly confirmed NPA asteroid (5247) Krylov.

[구 SS-07] DEEP-South: Lightcurves of Near Earth Asteroids from Year One Operations

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