

The DEEP-South Photometric Census of Asteroids and Comets

*Hong-Kyu Moon¹, Myung-Jin Kim¹, Jintae Park¹, Young-Jun Choi¹, Hee-Jae Lee^{1,2}, Dong-Heun Kim^{1,2}, JeongAhn Youngmin¹, Dong-Goo Roh¹, Hongu Yang^{1,3}, Hong-Suh Yim¹

1. Korea Astronomy and Space Science Institute, 2. Chungbuk National University, 3. Seoul National University

The large field of view and the round-the-clock observing capabilities of Korea Microlensing Telescope Network (KMTNet), a network of three identical 1.6 m aperture telescopes equipped with 18k x 18k CCD stationed in the southern hemisphere, enable discovery, astrometry and physical characterization of small Solar System bodies most efficiently. We call the software subsystem, the computation equipment, the project team and partners the Deep Ecliptic Patrol of the Southern Sky (DEEP-South). We defined several observation modes aimed at a number of scientific goals. Opposition Census (OC) is the most frequently used one for targeted observations of km-sized Near Earth Asteroids (NEAs) for obtaining spin states and taxonomy. An OC run is consisted of a sequence of exposures on shifts for more than two targets close to opposition. This multi-band, time-series photometry mode of OC also affords serendipitous by-products; discovery, astrometry and photometry of various objects far and near. Allocated telescope time (2h-7h), exposure (5-120 sec) and number of targets (normally, 1-5) dictate the apparent limiting magnitudes, projected sky motions and their nightly coverage. We designed and implemented basic software subsystem for automated observation scheduling of the three network telescopes and the pipelined processing of our NEA data. We will present some of the new results obtained from the DEEP-South observations.

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