

ASPIN PROGRAMME: PHOTOMETRY OF NEAR-EARTH ASTEROIDS

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Introduction: We carry out regular photometric observations of near-Earth asteroids (NEAs) within the Asteroid Search and Photometry Initiative (ASPIN) of the International Scientific Optical Network (ISON) [1]. The facilities of the network include more than 80 telescopes with apertures from 20 cm up to 2.6 m located at 38 observatories in 16 countries. We observe both newly discovered objects and well-known NEAs. The main objectives of the study are to determine rotation periods and amplitudes; to detect possible binary events by analysis of the obtained lightcurves; to obtain lightcurves for pole and shape modeling; to investigate YORP and BYORP effects.

Observations: The observations are carried out in the Johnson-Cousins photometric system or in the unfiltered mode to attain a good accuracy which is typically in the range of 0.01-0.03 mag. The main part of observations are made at the 70-cm Maksutov miniscus telescope of Abastumani Observatory where we have up to 100 nights per year [2]. The following CCD-telescopes are also regularly involved: 70 cm reflector at Chuguev (MPC code 121), 70 cm at Lisnyky (585), 80 cm at Odessa-Mayaki (583), 1 m at Tien-Shan Observatory (N42), 60 cm and 1.5 m at Maidanak (188), 2 m at NAO Rozhen (071), and 2.6 m at Crimea-Nauchnij (095). Occasionally, the telescopes with aper-

tures of 25 to 40 cm are also used in the case of bright NEA appearance.

Results: We present results of lightcurve observations of NEAs carried out in 2015 during 220 nights at 13 observatories with 16 telescopes. Lightcurves of 69 asteroids have been obtained, including 16 newly discovered NEAs. Rotation periods have been determined or improved for 20 NEAs, nine of which are very small bodies with diameters less than 300 m. Five objects of the smallest observed asteroids show rotation faster than 1 hour. The special photometric campaigns were carried out for four NEAs: 2015 FW117 in May, 1566 Icarus in June, 2015 FS332 in the early October, and 2015 TB145 at the end of October. Several NEAs have been observed to discover the YORP effect: 1580 Betulia, 1864 Daedalus, 4055 Magellan, (85990) 1999 JV6, (138852) 2000 WN10. Photometry of the binary asteroids (66391) 1999 KW4, and (357439) 2004 BL86 was aimed to improve the parameters of their systems.

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References: [1] Molotov I. E. et al. (2013) *ESA SP-723*, id.26. [2] Krugly Yu. N. et al. (2016) *Astron. & Astrophys. (Caucasus)*, 1, 38-48.