

Studies of physical parameters of kilometer sized NEA by the RTT-150 telescope.

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We are carrying out a program of experimental studies of an as-large-as-possible sample of kilometer sized NEAs with the 1.5m Russian-Turkish telescope RTT150. We present the results of polarimetric and photometric observations in V bandpass of 32 NEAs (23 objects with diameter larger than 1 km and 9 of them only a few hundred meters in diameter) with high proper motion near their close approaches performed at RTT150 between the August 2014 and June 2018 (regular observations had begun only in the spring 2018). The estimation of albedos and diameters of asteroids were made by means of polarimetric and photometric data. Because sources were observed at large phase angles from 40° to 100° for different asteroids, the measured linear polarization degree makes it possible to differentiate the taxonomy classes of observed sources even when using single shot observations. The highest polarization 27.1% was found for (164201) at a phase angle of ~75°. Taking into account the high inclination of the object (~35°), (164201) has a possibility to be a cometary nuclei. All objects smaller than 1 km were eliminated from analysis and the remaining 23 NEAs were separated into two groups according to the obtained albedo: 0.10 < MODERATE (55%) < 0.35, LOW (40%) < 0.10. For each group the probability density function of NEA perihelion was built as a fraction of asteroid number inside of given interval of perihelion parameter ($\Delta q=0.3$). It seems to be that there is increase of moderate albedo NEAs with perihelion parameter. However, this may be due to the incompleteness of sample. In addition to polarimetric determination, the spectral class of NEA (333888) was estimated as Sq using the low resolution spectra ($R\sim 600$, covered whole visual range from 4000Å to 9000Å) obtained with RTT150 facilities. Complex observations in the frame of this project will be continued. To avoid the loss of darker kilometer sized NEAs, the object observational list will be broadened with 416 more NEAs which meet the conditions: $q < 0.6$, $18.0^m < H < 19.5^m$. To estimate photometric slope (G) and shape of the target NEAs, additional long-term photometric observations in V-band will be performed at phase angles of 10° – 60° on T100 and T60 telescopes of the TUG Observatory.

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