

STATE AGENCY ON SCIENCE, INNOVATION  
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RESEARCH INSTITUTE “NIKOLAEV ASTRONOMICAL OBSERVATORY”

**ASTRONOMICAL RESEARCH:  
FROM NEAR-EARTH SPACE  
TO THE GALAXY**

International Conference

**ABSTRACT BOOK**

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processing are discussed. The database structure of the meteor patrolling and opportunities for immediate processing of observational data are described.

Questions of modernization of basis meteor patrolling with the use of new technical possibilities of receiver equipment and management systems are discussed. Prospects of basis television observations in meteor studies are presented.

## **PERSPECTIVES OF SPECTRAL OBSERVATIONS OF NEAS AT THE RTT150 TELESCOPE COMPLEX**

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New option, tracking on given trajectory, has been realized in an observational complex of 1.5m telescope RTT150. This makes it possible to get long exposure with minimal signal loss of the objects with high proper motions, in particularly, Near Earth Asteroids (NEAs). The reflecting spectra of NEAs – 433 (Eros), 1036 (Ganimed), 1917 (Cuyo) and 8567, with magnitudes range from 10.5 to 16.5 and the proper motion range from 20 to 160 arcsec per hour were obtained. The spectra are covered visible range from 3500 to 9000 Angstrom with the resolution  $R \sim 600$ . To compare the quality of spectra of asteroids with known classes (433, 1036 and 1917) the spectral classification in SMASS system were performed. The spectral class of NEA 8567 was estimated for the first time as a class Q. Due to “tracking on given trajectory” are carrying out without feedback, the exposure time of highly movement asteroids is limited by 600 seconds. For this duration the reflecting spectra of 16 mag asteroids with signal-to-noise ratio from 8 to 25 at whole visible range are obtained.

## **CLOSE ENCOUNTERS BETWEEN ASTEROIDS FOR DETERMINING ASTEROID MASSES IN THE TIME BEFORE GAIA**

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One of the possible scientific outcomes of the future Gaia mission in the field of Solar system research will be masses of large asteroids.

The perturbing effect of these asteroids onto orbits of asteroids of small masses is expected to be measured with reasonable errors during Gaia mission. For the cases of maximum perturbation for asteroids of small masses being occurred before or just after Gaia mission, the ground-based astrometric observations of high accuracy can be helpful in getting better solution.

The population of discovered asteroids is constantly growing, so the previous calculations made earlier (Kuzmanoski & Knezevic 1993, Hilton et al. 1996, Galad 2001, Galad & Gray 2002, and Fienga et al. 2003, Mouret et al. 2007) were not able to consider asteroids as perturbed candidates discovered later.

The details of method used (Hilton et al. 1996), the results of calculations made useful for planning astrometric activities at the ground-based telescopes will be described.

## **ASTROMETRY AND PHOTOMETRY OBSERVATIONS OF SELECTED ASTEROIDS WITHIN THE INTERNATIONAL JOINT PROJECT**

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The participating institutions of France, Ukraine, Russia and Turkey are engaged in the joint project complementary to one of the Gaia outputs for research of Solar system objects, namely determination of masses for large asteroids. The idea consists in observing and thus providing astrometry observations for the selected asteroids, which are already or will be perturbed before the launch of Gaia mission in 2013. Such observations will have high added value for those asteroids perturbed just before or after the mission window, and for which the Gaia data alone are insufficient. These observations will provide the orbit at the time of maximum deflection angle or perturbation useful for the later mass determination together with the Gaia data.