

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE  
RESEARCH INSTITUTE “NIKOLAEV ASTRONOMICAL OBSERVATORY”

**METHODS AND INSTRUMENTS  
IN ASTRONOMY: FROM GALILEO  
TELESCOPES TO SPACE PROJECTS**

International Workshop

**ABSTRACT BOOK**

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During the first observational campaign, measurements were carried out by two methods: along all visible orbit arc, in the limited sky zone with the largest density of objects. The first method is aimed at obtaining of maximum data volume to estimate the highest possible accuracy of orbit determination. The second method is designated to estimate a possibility of catalogue maintenance and enlargement for observations with several static telescopes. A quality of measurements for orbit improvement and a forecast accuracy were estimated for each method.

## **CATALOGUE OF POSITIONS AND ORBITAL ELEMENTS OF EARTH'S ARTIFICIAL SATELLITES AS A PART OF VIRTUAL OBSERVATORY**

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Regularly updated catalogue of positions and orbital elements of Earth's artificial satellites (EAS) are presented at the RI NAO website since 2005. The orbital elements are freely available. Information about the positions is provided on request by e-mail.

The catalogue contains data for the following orbit types of the EAS:

- geosynchronous and geotransitional orbits;
- low orbits;
- highly elliptical orbit.

Catalogue data is arranged by observation date and numbers of the EAS. The numbers correspond to the numbers of the NORAD catalogue. The catalogue is compiled using observations made in RI NAO. The observations are carried out by a combined method with the Fast Robotic Telescope. The orbital elements are calculated using Adams method of fifth order and data obtained during two or more nights. 105 geosynchronous and geotransitional satellites, 48 low orbit satellites, 1 highly elliptical orbit satellite are included in the catalogue now. Moreover, the internal accuracy of observations for reference stars and the EAS are given in the catalogue in a graphical format.