ABOUT USE OF THE QUICKLY METHOD FOR CALCULATION OF THE ELEMENT OF KEPLER ORBITS OF THE HIGH SATELLITE IN THE NIKOLAEV OBSERVATORY

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Numerical model use in the framework of the two bodies for control of the quality corner ground observations. Programms security were create from observations corner coordinates calculations the Kepler elements of the satellite orbit by the Laplas method then it improvement by the method differential corrections. Receive elements of the orbit use for calculation of the satellite positions in the moment observations. Since deviations from Kepler movement of the high satellite are unimportant during observations then discrepancy between observation and calculation positions can be use for characteristic of the observations accuracy.

In most processing observation rows a discrepancy O-C have tendency to increase near by extreme moments of observations that show directly on the dependence of the observation accuracy from satellite apparent brilliance.

On the foundation calculation discrepancy of the satellite positions can be calculation rootmeansquare meanings and rootmeansquare deviations of the orbits elements.

A row of examples of the processing corner observation a geostationary satellite are lead. This observations are made in the Nikolaev observatory.

TELESCOPES FOR OBSERVATIONS OF ARTIFICIAL SATELLITES OF THE EARTH IN THE RESEARCH INSTITUTE NAO

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Artificial satellites of the Earth are cataloged in the RI NAO with the aim of monitoring the space debris dynamics on all near-Earth orbits,

studing of the Earth geopotential and density variations in the upper atmosphere.

The observations are carried out with three telescopes, namely:

– the multi channel telescope (MCT) (160 mm, f/12.7);

– the axial meridian circle (AMC) (180 mm, f/13.8);

– the fast robotic telescope (FRT) (300 mm, f/5).

All telescopes are equipped with the CCD camera on the basis of ISD-017AP chip. Objectives of the MCT and FRT (100 mm, f/2.5) are used for observations of low orbit objects using high-sensitivity 1/2" TV CCD cameras. Main objectives of the MCT and FRT are used for observations of objects on low-Earth orbits (LEO) and geostationary orbits (GSO). The AMC is used for observations of objects on high-Earth orbits (HEO).

The telescopes allow us to observe on GSO in the range of 105°E to 32°W longitude; on LEO and HEO in the range of 25° in any direction. The observations are carried out with unmovable telescopes: on GSO by combined CCD mode, on HEO and LEO by quasi-strip mode.

Two groups of objects are included in the catalog. 90 geostationary satellites (GSS) of 18 telecommunication companies from 20 countries are included in the GEO group. 100 objects such as rocket carriers, used space apparatus, meteo satellites etc. are included in the LEO group.

Kepler orbit elements at a mean epoch of observations are calculated.

The catalog is available via the web site of the RI NAO. Physical features, equatorial coordinates at a mean epoch of 2000, orbit elements at a mean epoch of observations are given in the catalog.

The accuracy of single determination of (O-C) was estimated as the result of calculations of Kepler orbit elements. The accuracies for GEO and LEO observations were ±0.4"÷ ±1" and ±3"÷ ±10", respectively.

CCD OBSERVATIONS OF NEAR-EARTH ASTEROIDS: RESULTS, PROBLEMS AND PERSPECTIVES

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CCD observations of near-Earth asteroids (NEAs) started in Kharkiv Observatory in 1995. The observations with 70-cm home telescope are carried out on a regular basis and are directed to measure lightcurves