

THE USAGE OF RADAR AND OPTICAL OBSERVATIONS OF NEAR-EARTH ASTEROIDS AND MAIN BELT MINOR PLANETS FOR ASTROMETRY (ORBIT DETERMINATION, PARAMETERS ORIENTATIONS, MASS DETERMINATIONS)

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Near-Earth Asteroids (NEAs) are the solar system special class objects attracting the attention of astronomical community especially several last decades.

In this paper the results of usage the all available radar and corresponding optical NEAs observations in combined solution for different aims of astrometry are discussed. All available radar observations of 30 NEAs have been accumulated with optical ones (more than 20000 combined observations, including 230 radar and about 19800 optical ones of 30 asteroids and main belt minor planets) for global solution in different problems: the parameters orientation of FK5, the motion of dynamical equinox from 1750 till 2000 in Hipparcos system and several masses of selected asteroids have been estimated. The results are in good agreement with investigations of other researchers being used another kind of observations. In the list of asteroids with radar observations are several main belt minor planets. They have rather long observational history and smaller values of observational errors. Addition this kind observations in global solution improves the final results in every problem.

The addition of new radar observations can improve both values and accuracy of parameters under consideration. Making up observations based on the new high-precision ground-based and space techniques in the Hipparcos reference frame can give at last final answer about the existence and reason of the dynamical equinox motion. The addition several radar observations of the perturbed asteroid to optical ones can reduce the uncertainty in the factor of 2-2.5 times for the mass of perturbing asteroid.