

ACCURACY OF SINGLE MEASUREMENTS IN A LASER LOCATION

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In this paper, the determination of the accuracy of single measurements in a laser location of a satellite is considered. Various accuracy estimates for measurement and calibration are investigated. The influence of systemic and geometric errors caused by existing optical schemes of measuring systems and the design of satellite and reflective elements on them is studied. The time diagram of events at a laser location is considered. The geometrical, temporal and instrumental errors, as well as the electronic, geometrical and optical time delays arising during the laser location of existing satellites are investigated. The application of a new optical scheme for laser-location measurements and internal calibration is considered. The displacement of the calibration angle to the point of intersection of the optical axes of the telescope is considered. Error estimates are given for various types of satellites and their orbits. The most suitable reflector designs for satellites for improving the accuracy of single measurements are proposed. The question of the feasibility of developing new reflectors and their placement on the moon and Earth orbit is being studied. A mode of organizing measurements is proposed to increase their accuracy. We consider the joint work of laser location stations SLR 1874, the old and new laser stations in Mendeleevo to control the results and find the difference in the course of two time and frequency standards. We consider a method for comparing two nearby stations of a laser station in Mendeleevo, designed to determine the quality of measuring devices and their accuracy. The question of the applicability of this methodology to other nearby measuring installations is being investigated.