

Effects of reference frequency stability to SLR measurements errors.

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The specifics of conducting laser-ranging observations of spacecraft places high demands on both the short-term and long-term stability of the reference frequency of the synchronization system. The time intervals of a single measurement vary from units to tens of milliseconds. The observation results are a set of single measurements accumulated over several tens of minutes. The value of short-term stability directly affects the standard deviation of a single measurement, and the value of long-term stability affects the results of the entire session as a whole.

Modern requirement pushes toward millimeter and submillimeter absolute accuracy. At the same time, the requirements for calibration are increasing and the stability of the reference frequency should correspond to them.

The influence of the stability of the reference frequency to the results is analyzed and ways to improve the quality of measurements are indicated.