

Calibration of the Radial Installation Limit Error of the Accelerometer in the Gravity Gradient Instrument

Authors : Danni Cong, Meiping Wu, Xiaofeng He, Junxiang Lian, Juliang Cao, Shaokuncai, Hao Qin

Abstract : Gravity gradient instrument (GGI) is the core of the gravity gradiometer, so the structural error of the sensor has a great impact on the measurement results. In order not to affect the aimed measurement accuracy, limit error is required in the installation of the accelerometer. In this paper, based on the established measuring principle model, the radial installation limit error is calibrated, which is taken as an example to provide a method to calculate the other limit error of the installation under the premise of ensuring the accuracy of the measurement result. This method provides the idea for deriving the limit error of the geometry structure of the sensor, laying the foundation for the mechanical precision design and physical design.

Keywords : gravity gradient sensor, radial installation limit error, accelerometer, uniaxial rotational modulation

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