
Modeling the Calibration of DTG on a uniaxial gyrostabilizer

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The article discusses the features of determining the torque sensor scale factors of dynamically tuned gyroscopes on the automated turntable based on a uniaxial gyrostabilizer. Unlike conventional turntables, where very precise values of rotation speed are set and maintained by means of precision electromechanical systems, in the gyrostabilizer the turntable platform monitors the position of the controlled gyroscope. Such turntable has a simple structure, light weight, small dimensions, low energy consumption and cost. The mathematical model of the gyroscope-gyrostabilizer system is developed and its motion is studied in transient and steady-state regimes. Software Simulink (Matlab) was used for numerical simulation of gyroscope calibration process. The effect of the parameters of the measuring system including rotation angle sensors, devices for measuring the time of the turntable turn and the currents in the moment sensors on the calibration accuracy is shown. The influence of the Earth's own rotation speed is determined.

Keywords: *dynamically tuned gyroscope, gyrostabilizer, calibration*

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