The Motion of an Asymmetric Gyroscope

Lazarev Yu.F.

The motion of three-stage balanced gyro with an inner gimbals and an arbitrary matrix of the moments of inertia, the axis of proper rotation does not coincide with the principal axis of inertia. Composed generalized differential equations of the gyroscope in the original matrix form and realized their numerical integration for the case of a free gyroscope in the case of the resistance moment. Revealed a two-frequency character of natural oscillations, as well as the appearance of forced oscillations of the gyroscope due to its dynamic second imbalance. A theoretical analysis of the free movement of made up the matrix equations. Were obtained formulas for estimating the frequency of free oscillations and the amplitudes of the natural and forced oscillations.