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T-GERO- Theory of gyroscopic effects for rotating objects

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Abstract

The physics of the gyroscopic effects are more complex than represented in known theories with simplified mathematical models. Recent investigations have demonstrated that the external torque applied on a gyroscope generates the system of nine inertial torques acting interdependently around three axes. These torques are produced by rotating the mass elements of the spinning disc and manifested all gyroscopic effects. Gyroscopic inertial torques are generated by the centrifugal, common inertial, Coriolis forces, as well as the change in the angular momentum of the spinning rotor. These torques represent the fundamental principles of the gyroscope theory. New mathematical models for the gyroscopic effects describe their physics and validated by practical tests. The interrelated action of several inertial forces on the gyroscope manifests the phenomena of their deactivation that is the result of kinetic energy loss of the resistance inertial torques. The gyroscope does not possess properties that contradict physical principles. The method for computing inertial torques can be applied to all rotating objects of different designs like a cone, sphere, paraboloid, ellipsoid, propeller, etc. that manifest gyroscopic effects. The science of classical mechanics receives a new direction for computing motions of rotating objects in space.

Biography:

Dr. Ing. R. Usubamatov has completed his Ph.D. from Bauman Moscow State Technical University. He is a Professional Engineer in Mechanical, Manufacturing and Industrial Engineering. He worked as an engineer at a company and lecturer in universities of Kyrgyzstan and Malaysia. He is Professor of Kyrgyz State Technical University after I Razzaov. His key researches are Productivity Theory for Industrial Engineering and Theory of Gyroscopic Effects for Rotating Objects that represented by 8 books, 30 brochures, 61 patents of inventions and more than 350 manuscripts in reputed journals and has been serving as an editorial board member of repute.

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