

عنوان مقاله:

Rotations of a Rigid Body Close to the Lagrange Case under the Action of Nonstationary Perturbation Torque

محل انتشار:

مجله مکانیک کاربردی و محاسباتی، دوره 8، شماره 3 (سال: 1401)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

Perturbed motions of a rigid body, close to the Lagrange case, under the action of restoring and perturbation torques of forces are investigated in the paper. The following problem is formulated: investigating solutions behavior of system of equations of motion for nonzero values of small parameter on a sufficiently long time interval. To analyze a nonlinear system of equations of motion, the averaging method is used. The problem can be decomposed into slowly and quickly changing variables. Conditions for the possibility of averaging the equations of motion with respect to the phase of nutation angle are presented and averaging procedure for slow variables of a perturbed motion of a rigid body in the first approximation is described. As an example of the developed procedure, we investigate a perturbed motion, close to Lagrange case, taking into account constant dissipative and small torque, and dissipative torques depending on slow time. A new class of rotational motions of a dynamically symmetric rigid body about a fixed point .has been investigated with restoring and perturbation torques of forces being taken into account

کلمات کلیدی:

Perturbed motion, averaging method, Torque, Lagrange's case, Rigid body

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