

A comparison of algorithms for numerical integration of the kinematical equations of rigid body orientation in quaternion by Picard method

Lazarev Yu. F., Bobrovitskaya Y. G.

Updated algorithm of the fourth order of numerical integration of differential equations of motion of a rigid body in quaternion based on the method of Picard. A computer simulation shows that the resulting algorithm has exactly the fourth order, in contrast to those shown in the known-term literature. The developed method of constructing the algorithm is robust and allows us to construct algorithms and higher orders. The results can be used to solve the problems of inertial orientation, in particular, the spacecraft.