ANALYTICAL SOLUTION OF THE EULER-POINSOT PROBLEM

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Abstract. In the present article, an analysis was performed on the torque-free motion of a rigid body, developing Euler's analytical solution and Poinsot's geometric solution. The analytical solution for the angular velocity and Euler's angles was described given some initial conditions. Besides, an animation of Poinsot's geometric solution was elaborated and a study was carried out on the conditions in which the herpolhode forms a closed curve. Finally, an algorithm was developed that displays the obtained solutions, which also generates an animation of the geometric solution, and moreover provides an algorithm that produces closed herpolhodes.

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