Rigid bodies problems in celestial mechanics

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The aim is to present variety of problems connected with the study of dynamics of rigid bodies in celestial mechanics. Different topics are discussed: mathematical structure of problems involving rigid bodies, symmetries, regular solutions, approximations, question of integrability of selected models. As illustration the novel presentation of the unrestricted model of a symmetric rigid body and sphere is given and new classes of particular regular motions are shown. The solution of the problem of integrability of equation of motion of a rigid satellite in a circular problem is also presented.