

Multibody approach Matlab GUI for kinematic and dynamic analysis of planar mechanisms [

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text (article)

Analítica

The description and use of a Matlab programmed software with graphical interface created in GUIDE are presented in this paper. The report begins with the introduction of multibody approach fundamentals for planar mechanisms. Vector description of rigid elements, revolute and prismatic kinematic pairs, and rotatory or linear drivers (actuators) are presented with the set of the restriction equations. Numerical solution of the equations for both kinematics and dynamics of the mechanism elements is made with the Newton-Raphson algorithm. Sliding-crank four-link planar mechanism case study is used for familiarizing the user with the basic level multibody approach software that is introduced in the paper. The use of the software is painstakingly illustrated for the sliding-crank mechanism at every stage: definition of elements, joints, and actuators, followed by motion specification and the final visualization of the simulation results. A satisfactory validation is made by comparing the software findings against a SolidWorks simulation

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