Dynamics: Theory And Application Of Kane's Method

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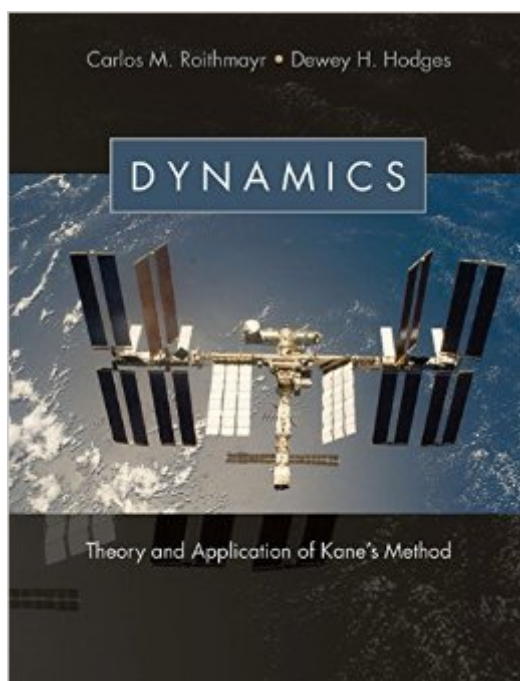
DYNAMICS

Theory and Application of Kane's Method

Synopsis

This book is ideal for teaching students in engineering or physics the skills necessary to analyze motions of complex mechanical systems such as spacecraft, robotic manipulators, and articulated scientific instruments. Kane's method, which emerged recently, reduces the labor needed to derive equations of motion and leads to equations that are simpler and more readily solved by computer, in comparison to earlier, classical approaches. Moreover, the method is highly systematic and thus easy to teach. This book is a revision of Dynamics: Theory and Applications by T. R. Kane and D. A. Levinson and presents the method for forming equations of motion by constructing generalized active forces and generalized inertia forces. Important additional topics include approaches for dealing with finite rotation, an updated treatment of constraint forces and constraint torques, an extension of Kane's method to deal with a broader class of nonholonomic constraint equations, and other recent advances.

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