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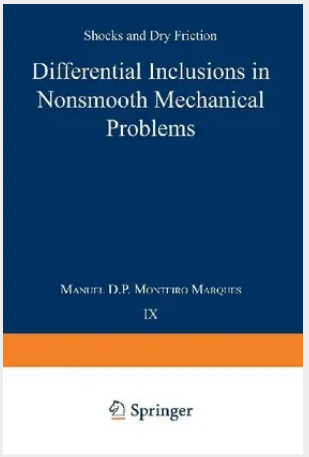
Differential Inclusions in Nonsmooth Mechanical Problems

Shocks and Dry Friction



This book is devoted to the sndy of some clifferentia.l inclusions motivated by Mechanics and of existcnce rcsults for the dynamics of systems with inelastic shocks, with or without friction. This ensures a certain unity of subject, techniques and applications, at the price of not including some earlier works [Mon 1-4]. In the introductory Chapter 0, sevcral essentia.l mathematical tools (either recent or recently rediscoven~d) are presented. I\1ainly they concern functions of bouncled variation defincd in real interva.ls (deriva.tion of Stieltjcs measures, compactness results. convergencrc in tlw sense of graphs) a.ncl geometrical inequa.lities. In Chapters 1 and 2, lvforea.u' s swecpiug process is considcred; this is a first-order differential inclusion (1) where the right-ha.nd siele is tla:' outw

0 Preliminaries.- 1 Regularization and Graph Approximation of a Discontinuous Evolution.- 2 Sweeping Processes by Convex Sets with Nonempty Interior.- 3 Inelastic Shocks with or without Friction: Existence Results.- 4 Externally Induced Dissipative Collisions.- 5 Further Applications and Related Topics.- Index of Notation.

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