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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	A Point of Departure -- Rigid Multibody Dynamics -- Elastic Motion -- Flexible Multibody Dynamics -- Spatial Discretization -- Stiff Mechanical Systems -- Time Integration Methods -- Numerical Case Studies.
Sommario/riassunto	This monograph, written from a numerical analysis perspective, aims to provide a comprehensive treatment of both the mathematical framework and the numerical methods for flexible multibody dynamics. Not only is this field permanently and rapidly growing, with various applications in aerospace engineering, biomechanics, robotics, and vehicle analysis, its foundations can also be built on reasonably established mathematical models. Regarding actual computations, great strides have been made over the last two decades, as sophisticated software packages are now capable of simulating highly complex structures with rigid and deformable components. The approach used in this book should benefit graduate students and scientists working in computational mechanics and related disciplines as well as those interested in time-dependent partial differential equations and heterogeneous problems with multiple time scales. Additionally, a number of open issues at the frontiers of research are addressed by taking a differential-algebraic approach and extending it to the notion of transient saddle point problems.