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	Autore	Kaltenbacher Manfred
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	Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
	Nota di contenuto	Introduction -- The Finite Element (FE) Method -- Mechanical Field -- Flow Field -- Acoustic Field -- Electromagnetic Field -- Coupled Flow-Structural Mechanical Systems -- Coupled Mechanical-Acoustic

Systems -- Computational Aeroacoustics -- Coupled Electostatic-Mechanical Systems -- Coupled Magnetomechanical Systems -- Piezoelectric Systems -- Algebraic Solvers -- Industrial Applications.

Sommario/riassunto	Like the previous editions also the third edition of this book combines the detailed physical modeling of mechatronic systems and their precise numerical simulation using the Finite Element (FE) method. Thereby, the basic chapter concerning the Finite Element (FE) method is enhanced, provides now also a description of higher order finite elements (both for nodal and edge finite elements) and a detailed discussion of non-conforming mesh techniques. The author enhances and improves many discussions on principles and methods. In particular, more emphasis is put on the description of single fields by adding the flow field. Corresponding to these field, the book is augmented with the new chapter about coupled flow-structural mechanical systems. Thereby, the discussion of computational aeroacoustics is extended towards perturbation approaches, which allows a decomposition of flow and acoustic quantities within the flow region. Last but not least, applications are updated and restructured so that the book meets modern demands.