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Soggetti	Computer mathematics Electrical engineering Magnetism Magnetic materials Mathematical physics Computational Mathematics and Numerical Analysis Electrical Engineering Magnetism, Magnetic Materials Mathematical Applications in the Physical Sciences
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Nota di bibliografia	Includes bibliographical references (pages 421-425) and index.
Nota di contenuto	1 The harmonic oscillator -- 2 The Series RLC Circuit -- 3 Linear electrical circuits -- 4 Maxwell’s equations in free space -- 5 Some solutions of Maxwell’s equations in free space -- 6 Maxwell’s equations in material regions -- 7 Electrostatics -- 8 Direct current -- 9 Magnetostatics -- 10 The eddy currents model -- 11 An introduction to nonlinear magnetics. Hysteresis -- 12 Electrostatics with MaxFEM -- 13 Direct current with MaxFEM -- 14 Magnetostatics with MaxFEM -- 15 Eddy currents with MaxFEM -- 16 RLC circuits with MaxFEM -- A Elements of graph theory -- B Vector Calculus -- C Function spaces for electromagnetism -- D Harmonic regime: average values -- E Linear nodal and edge finite elements -- F Maxwell’s equations in Lagrangian coordinates.
Sommario/riassunto	The book represents a basic support for a master course in electromagnetism oriented to numerical simulation. The main goal of

the book is that the reader knows the boundary-value problems of partial differential equations that should be solved in order to perform computer simulation of electromagnetic processes. Moreover it includes a part devoted to electric circuit theory based on ordinary differential equations. The book is mainly oriented to electric engineering applications, going from the general to the specific, namely, from the full Maxwell's equations to the particular cases of electrostatics, direct current, magnetostatics and eddy currents models. Apart from standard exercises related to analytical calculus, the book includes some others oriented to real-life applications solved with MaxFEM free simulation software.