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Sommario/riassunto	Master powerful new modeling tools that let you quantify and represent metamaterial properties with never-before accuracy. This first-of-its-kind book brings you up to speed on breakthrough finite-difference time-domain techniques for modeling metamaterial characteristics and

behaviors in electromagnetic systems. This practical resource comes complete with sample FDTD scripts to help you pave the way to new metamaterial applications and advances in antenna, microwave, and optics engineering. You get in-depth coverage of state-of-the-art FDTD modeling techniques and applications for electromagnetic bandgap (EBG) structures, left-handed metamaterials (LHMs), wire medium, metamaterials for optics, and other practical metamaterials. You find steps for computing dispersion diagrams, dealing with material dispersion properties, and verifying the left-handedness. Moreover, this comprehensive volume offers guidance for handling the unique properties possessed by metamaterials, including how to define material parameters, characterize the interface of metamaterial slabs, and quantify their spatial as well as frequency dispersion characteristics. The book also presents conformal and dispersive FDTD modeling of electromagnetic cloaks, perfect lens, and plasmonic waveguides, as well as other novel antenna, microwave, and optical applications. Over 190 illustrations support key topics throughout the book.