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Chapter 10 - Waves in Isotropic Cold Plasma: Dispersive MediumChapter 11 - Spatial Dispersion and Warm Plasma; Chapter 12 - Wave in Anisotropic Media and Magnetoplasma; Chapter 13 - Optical Waves in Anisotropic Crystals; Chapter 14 - Electromagnetics of Moving Media; Chapter 15 - Introduction and One-Dimensional Problems; Chapter 16 - Two-Dimensional Problem; Chapter 17 - Advanced Topics on Finite-Element Method; Chapter 18 - Case Study Ridged Waveguide : with Many Elements; Chapter 19 - Finite-Difference Time-Domain Method
Chapter 20 - Finite-Difference Time-Domain Method Simulation of Electromagnetic Pulse Interaction with a Switched Plasma SlabChapter 21 - Approximate Analytical Methods Based on Perturbation and Variational Techniques; Appendix 1A: Vector Formulas and Coordinate Systems; Appendix 1B: Retarded Potentials and Review of Potentials for the Static Cases; Appendix 1C: Poynting Theorem; Appendix 1D: Low-Frequency Approximation of Maxwell's Equations R, L, C, and Memristor M; Appendix 2A: AC Resistance of a Round Wire When the Skin Depth  Is Comparable to the Radius a of the Wire
Appendix 2B: Transmission Lines: Power CalculationAppendix 2C: Introduction to the Smith Chart; Appendix 2D: Nonuniform Transmission lines; Appendix 4A: Calculation of Losses in a Good Conductor at High Frequencies: Surface Resistance RS; Appendix 6A: On Restricted Fourier Series Expansion; Appendix 7A: Two- and Three-Dimensional Green's Functions; Appendix 9A: Experimental Simulation of a Warm-Plasma Medium; Appendix 9B: Wave Propagation in Chiral Media; Appendix 10A: Backscatter from a Plasma Plume due to Excitation of Surface Waves
Appendix 10B: Classical Photon Theory of Electromagnetic RadiationAppendix 10C: Photon Acceleration in a Time-Varying Medium; Appendix 11A: Thin Film Reflection Properties of a Warm Isotropic Plasma Slab between Two Half-Space Dielectric Media; Appendix 11B: The First-Order Coupled Differential Equations for Waves in Inhomogeneous Warm Magnetoplasmas; Appendix 11C: Waveguide Modes of a Warm Drifting Uniaxial Electron Plasma; Appendix 12A: Faraday Rotation versus Natural Rotation; Appendix 12B: Ferrites and Permeability Tensor
Appendix 14A: Electromagnetic Wave Interaction with Moving Bounded Plasmas

Sommario/riassunto

"Preface The subject of electromagnetics is still a core subject of the undergraduate electrical engineering (EE) curriculum; however, at most of the universities in United States, the time allotted to teach it is cut into half (one 3-credit course instead of two). The present graduates with BS degree in EE being rushed through the same curriculum content in a shorter time often miss the concepts and depend on a lot of formulas which they use as a recipe for some calculations based on an example worked out in the book. Some of them are fortunate to take a follow-up special elective course in microwaves or RF design or antennas or fiber optics, and so on, thus partly reinforcing one application area. Readily available commercial software allows them to do routine calculations and design without having a conceptual understanding of the expected solution. The commercial software is so user-friendly that we usually get a beautiful colored visualization of the solution, even if it is a wrong simulation of the physical problem. After getting one or two mild reprimands from the boss in his new

employment after graduation, the new graduate realizes that he needs to have a fairly good idea of what is the appropriate model to be simulated and what qualitative result is to be expected. Though the software is very useful, it is not a substitute for a conceptual understanding of the steps involved in solving the problem. Fortunately, for him, there is probably a university which offers graduate courses and there is an instructor/professor who understands that these bright students recruited by some of the top companies are not less smart than the employees recruited by the company, say a decade or two ago"--