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Field, Force, Energy and Momentum in Classical Electrodynamics

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About the ebook

This book begins with a detailed analysis of these equations, and proceeds to examine their far-reaching consequences. It takes Maxwell's "macroscopic" equations as the foundation of classical electrodynamics, and treats electrical charge, electrical current, polarization, and magnetization as the basic constituents of material media. A large number of examples demonstrate the solution of Maxwell's equations in diverse situations, and examine the flow of energy and momentum as well as the distribution of force and torque throughout the matter-field systems under consideration.

Contents

- ▶ Scalar and Vector Fields
- ▶ Foundations of the Classical Maxwell-Lorentz Theory of Electrodynamics
- ▶ Mathematical Preliminaries
- ▶ Solving Maxwell's Equations
- ▶ Solving Maxwell's Equations in Space-time: The Wave Equation
- ▶ The Lorentz Oscillator Model
- ▶ Plane Electromagnetic Waves in Isotropic, Homogeneous, Linear Media

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