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References; Chapter 3 Transmitting Biconical Antennas
3.1 Transmitting Biconical Antennas 3.2 Fields; The Exterior Region; The Interior Region; 3.3 TEM Mode; 3.4 Boundary Conditions; 3.5 Defining Integral Equations; 3.6 Solution of the Biconical Antenna Problem; 3.7 Power; References; Chapter 4 Receiving Biconical Antennas; 4.1 Receiving Biconical Antennas; 4.2 Incoming TE Fields; 4.3 Incoming TM Fields; 4.4 Exterior Fields, Powers, and Forces; 4.5 The Cross Sections; 4.6 General Comments; 4.7 Fields of Receiving Antennas; 4.8 Boundary Conditions; 4.9 Zero Degree Solution; 4.10 Non-Zero Degree Solutions; 4.11 Surface Current Densities; 4.12 Power References Chapter 5 Classical-Based Quantum Theory; 5.1 Electrons; 5.2 The Time-Independent Schrodinger Equation; 5.3 The Uncertainty Principle; 5.4 The Time-Dependent Schrodinger Equation; 5.5 Quantum Operators; 5.6 Wave Function Orthogonality; 5.7 Electron Spin; 5.8 Harmonic Oscillators; 5.9 Angular Momentum, Central Force Fields; References; Chapter 6 Quantized Energy Exchanges; 6.1 Blackbody Radiation, Long Wavelength Limit; 6.2 Blackbody Radiation Law Using Energy; 6.3 Blackbody Radiation Law Using Momentum; Damping Product Rv; Momentum Transfer 2; 6.4 The Zero-Point Field
6.5 Coulomb Potential Well 6.6 Hydrogen Atom Eigenfunctions; 6.7 Perturbation Analysis; 6.8 Non-Ionizing Transitions; 6.9 Absorption and Emission of Radiation; 6.10 Dipole Radiation Selection Rules; 6.11 Many-Electron Systems; References; Chapter 7 Matched Multipolar Sources; 7.1 Radiating Electric Dipole; Radiation Q; 7.2 Radiation Reaction Force; Real and Reactive Radiation Reaction Forces; The Dipole Case; 7.3 Stress in a Dipole Radiation Field; 7.4 Pairs of Radiating Multipoles; Directivity; Field Energy; Radiation Q; Linear Momentum; Radiated Angular Momentum
7.5 Characterization of Sums over Matched Modes

Sommario/riassunto

This book provides a classical physics-based explanation of quantum physics, including a full description of photon creation and annihilation, and successful working models of both photons and electrons. Classical field theory, known to fully describe macroscopic scale events, is shown to fully describe atomic scale events, including photon emission and annihilation. As such the book provides a 'top-down' unification of electromagnetic and quantum theories.