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Autore	Gross Franz
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2.3 Interactions between particles and fields2.4 Plane wave expansions; 2.5 Massive vector fields; 2.6 Field quantization; 2.7 Spin of the photon; Problems; 3. Interaction of Radiation with Matter; 3.1 Time evolution and the S-matrix; 3.2 Decay rates and cross sections; 3.3 Atomic decay; 3.4 The Lamb shift; 3.5 Deuteron photodisintegration; Problems; Part II RELATlVlSTlC EQUATIONS; 4. The Klein-Gordon Equation; 4.1 The equation; 4.2 Conserved norm; 4.3 Solutions for free particles; 4.4 Pair creation from a high Coulomb barrier; 4.5 Two-component form; 4.6 Nonrelativistic limit
4.7 Coulomb scattering4.8 Negative energy states; Problems; 5. The Dirac Equation; 5.1 The equation; 5.2 Conserved norm; 5.3 Solutions for free particles; 5.4 Charge conjugation; 5.5 Coulomb scattering; 5.6 Negative energy states; 5.7 Nonrelativistic limit; 5.8 The Lorentz group; 5.9 Covariance of the Dirac equation; 5.10 Bilinear covariants; 5.11 Chirality and massless fermions; Problems; 6. Application of the Dirac Equation; 6.1 Spherically symmetric potentials; 6.2 Hadronic structure; 6.3 Hydrogen-like atoms; Problems; Part III ELEMENTS OF QUANTUM FIELD THEORY; 7. Second Quantization
7.1 Schrodinger theory7.2 Identical particles; 7.3 Charged Klein-Gordon theory; 7.4 Dirac theory; 7.5 Interactions: An introduction; Problems; 8. Symmetries I; 8.1 Noether's theorem; 8.2 Translations; 8.3 Transformations of states and operators; 8.4 Parity; 8.5 Charge conjugation; 8.6 Time reversal; 8.7 The PCT theorem; Problems; 9. Interacting Field Theories; 9.1 Ø3 theory: An example; 9.2 Relativistic decays; 9.3 Relativistic scattering; 9.4 Introduction to the Feynman rules; 9.5 Calculation of the cross section; 9.6 Effective nonrelativistic potential; 9.7 Identical particles
9.8 Pion-nucleon interactions and isospin9.9 One-pion exchange; 9.10 Electroweak decays; Problems; 10. Quantum Electrodynamics; 10.1 The Hamiltonian; 10.2 Photon propagator: ep scattering; 10.3 Antiparticles: e+e- ->+ +-; 10.4 e+e- annihilation; 10.5 Fermion propagator: Compton scattering; Problems; 11. Loops and Introduction to Renormalization; 11.1 Wick's theorem; 11.2 QED to second order; 11.3 Electron self-energy; 11.4 Vacuum bubbles; 11.5 Vacuum polarization; 11.6 Loop integrals and dimensional regularization; 11.7 Dispersion relations; 11.8 Vertex corrections
11.9 Charge renormalization

Sommario/riassunto

An accessible, comprehensive reference to modern quantum mechanics and field theory.In surveying available books on advanced quantum mechanics and field theory, Franz Gross determined that while established books were outdated, newer titles tended to focus on recent developments and disregard the basics. Relativistic Quantum Mechanics and Field Theory fills this striking gap in the field. With a strong emphasis on applications to practical problems as well as calculations, Dr. Gross provides complete, up-to-date coverage of both elementary and advanced topics essential for a well-round