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Nota di contenuto	Part I: Building on Simple Ideas -- Chapter 1 Waves and Sources -- Part II Calculations in Classical Electromagnetism -- Chapter 2 The Influence of a Passing Charge -- Chapter 3 The Field of a Moving Charge -- Chapter 4 Radiation by the Apparent Angular Acceleration of Charge -- Chapter 5 The Dispersion and Absorption of Electromagnetic Waves -- Chapter 6 Energy Loss of a Charge Moving in a Medium -- Chapter 7 Scattering of a Charge Moving in a Medium -- Part III Two Practical Applications -- Chapter 8 Relativistic Particle Identification -- Chapter 9 Ionisation Beam Cooling -- List of Symbols -- Bibliography -- Index.
Sommario/riassunto	This book is about the energy loss and the coherent radiation emitted by a relativistic charge in matter. These phenomena – locally deposited energy, Cherenkov radiation and transition radiation – are the basis of any charged particle detector able to discriminate charges by their velocity. This book describes these phenomena and how they are related. The fundamental field equations and first principles are used to derive the spectrum of energy-loss signals and thence the velocity resolution that can be achieved. Two specific applications are then followed: the first shows that this resolution has been achieved in practice with a multi-particle detector in the course of an experiment at

CERN, and the second shows how, by including scattering, the technique of ionisation cooling of accelerator beams may be reliably simulated. The book is based on a series of lectures given at the University of Oxford to graduate students in experimental particle physics. Some knowledge of mathematical physics at an undergraduate level is assumed, specifically Maxwell's equations and classical optics.
