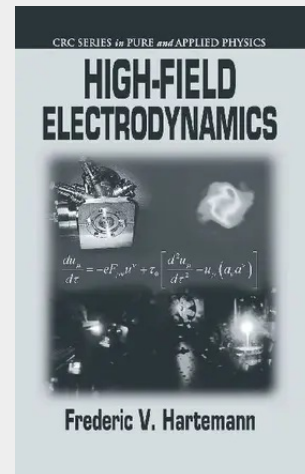


High-Field Electrodynamics

Tremendous technological developments and rapid progress in theory have opened a new area of modern physics called high-field electrodynamics: the systematic study of the interaction of relativistic electrons or positrons with ultrahigh-intensity, coherent electromagnetic radiation. This advanced undergraduate/graduate-level text provides a detailed introduction to high-field electrodynamics, from its fundamentals to some of its important modern applications. The author describes a broad collection of theoretical techniques, and where possible, approaches derivations by at least two different routes to yield deeper physical insight and a wider range of mathematical and physical techniques. He also discusses some of the outstanding ramifications of electrodynamics in areas ranging from quantum optics, squeezed states, and the Einstein-Podolsky-Rosen paradox to rotating black holes, non-Abelian gauge field theories, and the Bohm-Aharonov effect. High-Field Electrodynamics gives a comprehensive description of the theoretical tools needed to approach this novel discipline. It highlights important modern applications and serves as a starting point for more advanced and specialized research at the frontiers of modern physics.

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