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Titolo	Classical Electrodynamics : From Image Charges to the Photon Mass and Magnetic Monopoles // by Francesco Lacava
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Descrizione fisica	1 online resource (XIV, 195 p. 57 illus., 7 illus. in color.)
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Disciplina	537.6
Soggetti	Optics Electrodynamics Physics Microwaves Optical engineering Electronic circuits Classical Electrodynamics Mathematical Methods in Physics Microwaves, RF and Optical Engineering Electronic Circuits and Devices
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Nota di contenuto	1. Classical Electrodynamics: a short survey -- 2. Orthogonal coordinates -- 3. Multipole expansion -- 4. Method of image charges -- 5. Image charges and dielectrics -- 6. Electrostatics and complex functions -- 7. Relativistic transformations of the electric and magnetic fields -- 8. Relativistic Covariance of the Electrodynamics -- 9. The resonant cavity -- 10. Energy and momentum of the electromagnetic field -- 11. The Feynman paradox -- 12. The test of Coulomb's Law and the mass of the photon -- 13. Magnetic Monopoles.
Sommario/riassunto	This book proposes intriguing arguments that will enable students to achieve a deeper understanding of electromagnetism, while also presenting a number of classical methods for solving difficult problems. Two chapters are devoted to relativistic electrodynamics, covering all aspects needed for a full comprehension of the nature of

electric and magnetic fields and, subsequently, electrodynamics. Each of the two final chapters examines a selected experimental issue, introducing students to the work involved in actually proving a law or theory. Classical books on electricity and magnetism are mentioned in many references, helping to familiarize students with books that they will encounter in their further studies. Various problems are presented, together with their worked-out solutions. The book is based on notes from special lectures delivered by the author to students during the second year of a BSc course in Physics, but the subject matter may also be of interest to senior physicists, as many of the themes covered are completely ignored or touched only briefly in standard textbooks.
