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Descrizione fisica	1 online resource (568 pages)
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Nota di bibliografia	Includes bibliographical references (pages 525-526) and index.
Nota di contenuto	1. Introduction -- 2. Transverse motion -- 3. Synchrotron motion -- 4. Physics of electron storage rings -- 5. Special topics in beam physics -- Appendix A. Classical mechanics and analysis -- Appendix B. Numerical methods and physical constants.
Sommario/riassunto	This book is intended to be used as a graduate or senior undergraduate textbook in accelerator physics and science. It can be used as preparatory course material for graduate accelerator physics students doing thesis research. The text covers historical accelerator development, transverse betatron motion, synchrotron motion, an introduction to linear accelerators, and synchrotron radiation phenomena in low emittance electron storage rings, introduction to special topics such as the free electron laser and the beam-beam interaction. Attention is paid to derivation of the action-angle variables of the phase space, because the transformation is important for understanding advanced topics such as the collective instability and nonlinear beam dynamics. Each section is followed by exercises, which are designed to reinforce the concept discussed and to solve a realistic accelerator design problem.