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Sommario/riassunto	<p>Research and development of high energy accelerators began in 1911. Since then, progresses achieved are: development of high gradient dc and rf accelerators, achievement of high field magnets with excellent field quality, discovery of transverse and longitudinal beam focusing principles, invention of high power rf sources, improvement of ultra-high vacuum technology, attainment of high brightness (polarized/unpolarized) electron/ion sources, advancement of beam dynamics and beam manipulation schemes, such as beam injection, accumulation, slow and fast extraction, beam damping and beam cooling, instability feedback, etc. The impacts of the accelerator development are evidenced by the many ground-breaking discoveries in particle and nuclear physics, atomic and molecular physics, condensed matter physics, biology, biomedical physics, nuclear medicine, medical therapy, and industrial processing. 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 in graduate accelerator physics 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. Hamiltonian dynamics is used to</p>

understand beam manipulation, instability and nonlinearity. Each section is followed by exercises, which are designed to reinforce the concept discussed and to solve a realistic accelerator design problem.
