Particle Accelerator Physics

By Wiedemann, Helmut

Condition: New. Publisher/Verlag: Springer, Berlin | This book by Helmut Wiedemann is a well-established, classic text, providing an in-depth and comprehensive introduction to the field of high-energy particle acceleration and beam dynamics.The present 4th edition has been significantly revised, updated and expanded. The newly conceived Part I is an elementary introduction to the subject matter for undergraduate students. Part II gathers the basic tools in preparation of a more advanced treatment, summarizing the essentials of electrostatics and electrodynamics as well as of particle dynamics in electromagnetic fields. Part III is an extensive primer in beam dynamics, followed, in Part IV, by an introduction and description of the main beam parameters and including a new chapter on beam emittance and lattice design. Part V is devoted to the treatment of perturbations in beam dynamics. Part VI then discusses the details of charged particle acceleration. Parts VII and VIII introduce the more advanced topics of coupled beam dynamics and describe very intense beams - a number of additional beam instabilities are introduced and reviewed in this new edition. Part IX is an exhaustive treatment of radiation from accelerated charges and introduces important sources of coherent radiation such as synchrotrons and free-electron lasers....

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