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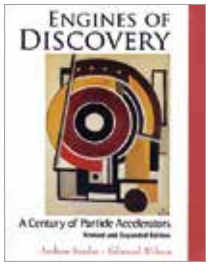

A. Sessler and E. Wilson

Engines of Discovery
A Century of Particle Accelerators. Revised and Expanded Edition

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The book is a detailed and interesting review of particle accelerators and their applications, and everyone can find it very attracting from many points of view, the book being able to draw the attention of people curious about the most relevant discoveries like the ones concerning the matter elements.
The evolution of particle accelerators over many decades is very well traced, until LHC which is the last-generation accelerator.
But the main purpose of the book is to underline the outstanding role of accelerators in solving practical questions of every day: from long linear accelerators providing beams for material science and biomedical research to spallation sources producing neutrons for studying the structure of materials to accelerators for therapy installed in the hospitals. In this case, physicists and engineers working in the field of advanced technology can be happy that their contribution can be immediately used in the real life.
The first 8 chapters are intended to develop the evolution of accelerators from their birth - electrostatic, cyclotrons, linacs, synchrotrons - to the design and realization of powerful colliders for fundamental physics. This long and interesting review is then followed by a chapter dedicated to particle detection, with a special mention of the huge installations working with LHC.
While the aim of these first 8 chapters is to present the rationale of accelerators evolution towards high energy, from the IX chapter on, the message is changing: most of the information is around the research lines made possible by the accelerator facilities.
In particular, basic science, high-energy physics and nuclear physics at LHC are described in Chapter IX. Then Chapter X reveals how synchrotron radiation facilities allow for studying many features related to life science and materials. Use of accelerators in medicine, for therapy and radioisotope production, is explored in Chapter XI. In Chapter XII, the aim of building spallation sources is described: neutrons are very useful in life and material sciences. Industries often make use of accelerators for ion implantation, or material irradiation, or sterilization of food: this is well described in Chapter XIII. Finally, applications in the field of national security (Chapter XIV) and energy production and environmental research (Chapter XV) are treated.
Some final thoughts are expressed in the last chapter (Chapter XVI). In particular, among many useful considerations, the present issues to get accelerated beams through the use of lasers and plasmas are mentioned. This is related to the need of more accelerators in the interdisciplinary field of research, since the cost of such systems could be sensibly reduced as compared to conventional accelerator installations.
In conclusion, the book offers a very pleasant trip in the world of accelerators and applications, putting particular emphasis on the facilities designed and realized to give answers to common life questions.

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