Electron Scattering for Nuclear and Nucleon Structure

The scattering of high-energy electrons from nuclear and nucleon targets provides a microscope for examining the structure of these tiny objects. The best evidence we have on what nuclei and nucleons actually look like comes from electron scattering. This book examines the motivation for electron scattering and develops the theoretical analysis of the process. It discusses our current theoretical understanding of the underlying structure of nuclei and nucleons at appropriate levels of resolution and sophsitication, and summarizes present experimental electron scattering capabilities. Only a working knowledge of quantum mechanics and special relativity is assumed, making this a suitable textbook for graduate and advanced undergraduate courses. It will also provide a valuable summary and reference for researchers already working in electron scattering and other areas of nuclear and particle physics. This title, first published in 2002, has been reissued as an Open Access publication on Cambridge Core.

JOHN DIRK WALEKA obtained his PhD in nuclear theory from the Massachusetts Institute of Technology in 1958. He was professor of Physics at Stanford University from 1966 to 1987 and then went on to become Scientific Director of the Continuous Electron Beam Accelerator Facility (CEBAF) from 1986 to 1992. He is now Govenor's Distinguished CEBAF Professor of Physics at the College of William and Mary. His research interests cover theoretical nuclear and sub-nuclear physics, in particular nuclear structure, the relativistic nuclear many-body problem, strong coupling QCD, and electroweak interactions with nuclei. He has published numerous papers on nuclear physics, and in 1996 the American Physical Society recognized his work with the award of the Bonner Prize. He has lectured on electron scattering throughout the United States and Europe.

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