

ELECTROWEAK THEORY

The electroweak theory unifies two basic forces of nature: the weak force and electromagnetism. This achievement is comparable to Maxwell's unification of electricity and magnetism. The theory made numerous predictions that have been confirmed by experiments. This book is a concise introduction to the structure of the electroweak theory and its applications.

Electroweak Theory describes the structure and properties of field theories with global and local symmetries, leading to the construction of the standard model. The greater part of the book explains the basic predictions of the theory. It describes the new particles and processes predicted by the theory, and compares them with experimental results. Among the topics covered are neutral currents, the properties of W and Z bosons, the properties of quarks and mesons containing heavy quarks, neutrino oscillations, CP-asymmetries in K, D, and B meson decays, and the search for Higgs particles.

The book contains sections guiding the reader through the complicated calculations of Feynman diagrams, such as box and penguin diagrams. There are discussions of the results and their relevance to physical phenomena. Each chapter contains selected problems, stemming from the long teaching experience of the author, to supplement the text. This will be of great interest to graduate students and researchers in elementary particle physics. Password protected solutions will be available to lecturers at www.cambridge.org/9780521880987. This title, first published in 2007, has been reissued as an Open Access publication on Cambridge Core.

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