Part of

Physics : Elementary Particles, Quantum Field Theory

Ecker, Gerhard, Universität Wien, Vienna, Austria

Particles, Fields, Quanta

From Quantum Mechanics to the Standard Model of Particle Physics

- Presents the exciting development from the beginning of the quantum age to modern particle physics
- Inspires physics students, pupils, teachers and anyone interested in physics
- Illuminates the highly topical interplay of theory and experiment
- Supported with easy-to-use glossary

This book provides an introduction to the current state of our knowledge about the structure of matter. Gerhard Ecker describes the development of modern physics from the beginning of the quantum age to the standard model of particle physics, the fundamental theory of interactions of the microcosm. The focus lies on the most important discoveries and developments, e.g. of quantum field theory, gauge theories and the future of particle physics. The author also emphasizes the interplay between theory and experiment, which helps us to explore the deepest mysteries of nature. "Particles, Fields, Quanta" is written for everyone who enjoys physics. It offers high school graduates and students of physics in the first semesters an encouragement to understand physics more deeply. Teachers and others interested in physics will find useful insights into the world of particle physics. For advanced students, the book can serve as a comprehensive preparation for lectures on particle physics and quantum field theory. A brief outline of the mathematical structures, an index of persons with research focuses and a glossary for quick reference of important terms such as gauge theory, spin and symmetry complete the book. From the foreword by Michael Springer: "The great successes and the many open questions this book describes illustrate how immensely complicated nature is and nevertheless how much we already understand of it." The author Gerhard Ecker studied theoretical physics with Walter Thirring at the University of Vienna. His research focus has been on theoretical particle physics, in particular during several long-term visits at CERN, the European Organisation for Nuclear Research in Geneva. In 1986 he was promoted to Professor of Theoretical Physics at the University of Vienna. Since 1977 he has given both basic lectures in theoretical physics and advanced courses on different topics in particle physics, e.g.