

Walter Greiner, University of Frankfurt, FRG

Theoretical **Section Physics**

Text and Exercise Books

Theoretical Physics is a major survey of quantum theory based on Walter Greiner's long-running and highly successful course at the University of Frankfurt.

The text is divided into five volumes:

Quantum Mechanics - An Introduction Quantum Mechanics - Symmetries Relativistic Quantum Mechanics Quantum Electrodynamics Gauge Theory of Weak Interactions

These five volumes take the reader from the fundamental postulates of quantum mechanics up to the latest research in particle physics.

Walter Greiner

Quantum Mechanics -An Introduction

1989. XV, 347 pp. 57 figs. Softcover DM 68.-ISBN 3-540-18755-3

Volume 1 lays the foundation for the rest of the course. Starting from black-body radiation, the photo-electric effect and waveparticle duality, Greiner goes on to discuss the uncertainty relations, spin and many-body systems, then discusses applications to the hydrogen atom and the Stern-Gerlach and Einstein-de Haas experiments. The mathematics of representation theory, S-matrices, perturbation theory, eigenvalues and hypergeometric differential equations are presented in detail, with 84 fully and carefully worked examples and exercises to consolidate the material.

Walter Greiner, Berndt Müller Quantum Mechanics -**Symmetries**

1989. XVI, 368 pp. 81 figs. Softcover DM 78,-ISBN 3-540-19201-8

Volume 2 presents a particularly appealing and successful theme in advanced quantum mechanics – symmetries. After a brief introduction to symmetries in classical mechanics, the text turns to their relevance in quantum mechanics, the consequences of rotation symmetry and the general theory of Lie groups. The Isospin group, hypercharge, SU(3) and their applications are all dealt with in depth before a chapter on charm and SU(3) leads to the frontiers of research in particle physics. This unique text includes almost a hundred detailed, worked examples and problems.

Springer-Verlag Berlin Heidelberg New York London Paris Tokyo Hong Kong

Heidelberger Platz 3, D-1000 Berlin 33 175 Fifth Ave., New York, NY 10010, USA 8 Alexandra Rd., London SW19 71Z, England · 26, rue des Carmes, F-75005 Pars 37-3. Hongo 3-chome, Bunkyo-ku, Tokyo 113, Japan Room 1603, Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong

