



New from Addison Wesley

FOUNDATIONS OF QUANTUM MECHANICS

by J. M. JAUCH, *University of Geneva, Switzerland*

This advanced text is designed to acquaint the reader with the modern approach to the subject and with the mathematical tools used in this approach. The book, which uses modern mathematical language to a greater degree than is customary in other texts, is chiefly concerned with conceptual foundations rather than applications or approximations. Standard reference material is augmented by results of recent research, conducted in Geneva.

299 pp. \$15.00

UNIVERSITY OF CHICAGO GRADUATE PROBLEMS IN PHYSICS: WITH SOLUTIONS

By JEREMIAH A. CRONIN, *University of Rochester*, and DAVID F. GREENBERG and VALENTINE L. TELEGDI, *University of Chicago*

Designed for self-study, this book is intended to prepare the senior-graduate student in physics for the "qualifying exam" for admission to the Ph.D. degree. Problems are stated and solutions are worked out, often in several ways. There is an emphasis on physical concepts in the solutions proposed. The book is intended to be useful to both U. S. and foreign students. The latter will find it particularly helpful if they intend to pursue graduate studies in America.

263 pp. Hardbound: \$8.50 Paperbound: \$4.95

ADVANCED QUANTUM MECHANICS

By J. J. SAKURAI, *University of Chicago*

The purpose of this second-year graduate-level text is to present major advances in quantum physics not covered in usual courses in nonrelativistic quantum mechanics. In content the book covers the usual fundamental topics, *vis* the quantum theory of radiation and the Dirac theory of the electron. In addition, a number of diverse topics are included which are designed to address a wide community of physicists.

336 pp. 52 illus. \$15.00

MATHEMATICAL PHYSICS

By EUGENE BUTKOV, *St. John's University, Jamaica, Long Island*

Employing the inductive approach, this graduate-level text and reference presents a classroom-type discussion, includes many cross-references, and makes frequent references to the questions of mathematical rigor. Stress is given to the pedagogical side of the book in order to make it more readable to the student and well suited for independent study.

c. 768 pp. 213 illus. Approx. \$14.75

WAVE PHENOMENA

By DUDLEY H. TOWNE, *Amherst College*

Presenting a unified treatment of transverse waves on a string and acoustic and electromagnetic waves, this text aims at developing the orientation of theoretical physics with a minimal use of mathematics which is not already familiar to the student. The book stresses the mastery of certain mathematical techniques, emphasizing the wave properties common to sound and light and showing how the mathematics unifies diverse physical situations.

482 pp. 188 illus. \$12.50

INTRODUCTION TO NUCLEAR PHYSICS

By HARALD ENGE, *Massachusetts Institute of Technology*

This book gives the student an introduction to one of the most important areas of modern physics. In a complete and up-to-date presentation, the book treats two-body problems, properties of stable nuclei, nuclear models, disintegration of unstable nuclei, nuclear reactions, nuclear power, and elementary particles. Experimental facts are followed by the presentation of theory and comparisons.

582 pp. 281 illus. \$13.50

For further information write Dept. A-109

Addison-Wesley
PUBLISHING COMPANY, INC.
Reading, Massachusetts 01867



THE SIGN OF
EXCELLENCE

The present volume is concerned with optical properties, including lattice effects, intrinsic absorption, free-carrier phenomena and photoelectronic effects. Volume 4 will include thermodynamic properties, phase diagrams, diffusion, hardness, and phenomena in solid solutions as well as the effects of strong electric fields, hydrostatic pressure, nuclear irradiation, large impurity concentrations, and nonuniformity of impurity distributions on electrical and other properties of III-V compounds. Much of the information presented is intended to be of permanent value.

While this sequence of volumes is thus primarily a reference work covering related major topics and possibly also of use in graduate courses, the ASM book is aimed at the educational interests of the metallurgists and is of ephemeral value. The authors review essentially advances made during the past five years in the theoretical calculation and to some extent in the experimental determination of the electronic structure and properties of metals and alloys. Emphasis is on the noble metals.

Of some note is that nearly all the articles in both books are, contrary to current trends, authored by only one person. Both books have a subject index, but the one in the Academic Press publication appears more comprehensive; in addition, it also has a useful author index. Both books are reasonably priced for current standards and in terms of what they offer.

* * *

The reviewer is manager of the materials research laboratory, Martin Marietta Corp., Orlando, Fla.

Positional astronomy

PRINCIPLES OF ASTROMETRY: WITH SPECIAL EMPHASIS ON LONG-FOCUS PHOTOGRAPHIC ASTROMETRY. By Peter Van de Kamp. 227 pp. Freeman, San Francisco, 1967. \$6.50

by Herbert Malamud

Peter Van de Kamp, of the Sproul Observatory, is a leading authority in the field of astrometry. This book is the first general introduction to the field available in book form. Since the po-

sitions of the stars on the celestial sphere have been studied for more than two millenia, it is surprising that this book was not written earlier. It is all the more welcome now that it has appeared.

First, the subject of spherical astronomy is introduced by a survey of the most frequently used relations of spherical trigonometry. There follows a brief description of celestial coordinate systems, definitions and formulas of astrometry, and an elementary treatment of the effects of atmospheric refraction. Precession, stellar parallax, aberration, solar motion and galactic rotation are discussed.

The second part of the book is concerned with the relation between plane and spherical astrometry and the techniques involved. Van De Kamp deals with determination of stellar parallaxes, plane reduction of stellar paths and spherical reduction of the positions of nearer bodies including planets, comets, asteroids and satellites. Orbital analysis of visual binaries, including the multiple-exposure technique, is the next subject. From this analysis one may deduce the mass ratio of double-star components and the individual masses if the total mass of the binary is known.

The observation of perturbations in the paths of what appear to be single stars often indicates presence of un-

seen companions. Particularly interesting are those cases in which the mass of the companion is low enough to be considered of planetary size. The second section is concluded by a survey of the application of the long-focus technique to star fields, clusters and widely separated binaries.

The final section of the book consists of one chapter on the general theory of errors and another on the method of least squares.

The book is meant as an intermediate-level text; a knowledge of elementary astronomy, solid geometry, trigonometry and calculus is expected of the reader. It is concerned with the mathematics of astrometry rather than with the mechanical tools of the trade, thus filling a serious gap in the literature.

Van de Kamp has written a fine text for a course on astrometry that may also be used as supplementary reading for other courses such as those on multiple stars, galactic structure and so forth. It is too succinct, perhaps, to be easily used for independent study; for such study I would have preferred another hundred pages or so for more detailed explanation of the concepts involved (the mathematics is very adequately detailed).

* * *

Herbert Malamud is director of physics at the Radiation Research Corporation.

Physical acoustics and the solid state

PHYSICAL ACOUSTICS, VOL. 3/A: THE EFFECT OF IMPERFECTIONS. Warren P. Mason, ed. 512 pp. Academic Press, New York, 1966. \$18.50

PHYSICAL ACOUSTICS, VOL. 3/B: LATTICE DYNAMICS. Warren P. Mason, ed. 336 pp. Academic Press, New York, 1965. \$12.00

by Walter G. Mayer

Twenty-one experts have contributed to the two parts of volume 3 of Warren P. Mason's treatise on physical acoustics. While volume 2 was concerned with the motion of atoms and molecules in fluids, these books discuss aspects of mechanical behavior that are to be expected in solids. Part A deals primarily with relaxation phenomena and effects of imperfections;

part B is concerned with the relation of acoustic waves and the dynamics of the lattice.

The first two chapters of part A describe the use of internal friction peaks in the study of point defects. The other sections give thorough and extensive discussions of dislocations and their interaction with mechanical waves. Various theoretical and experimental considerations are presented that describe in great detail the important properties of defects including plastic deformation, fatigue parameters and diffusion of defects.

Part B is to some extent a continuation of part A, with main emphasis on special topics of lattice dynamics. With the exception of one section on elastic waves in the earth, the chap-

NEW



PRINCIPLES OF SOLID STATE PHYSICS

By Robert A. Levy

University of Cincinnati

This new, introductory text is designed for use in a one semester, under graduate course. The text material has been divided into three parts: Part 1 considers mechanical or geometrical properties, that is, those properties describable by a lattice of mass points; Part 2 discusses what happens if electric charge and magnetic moment are to be associated with the lattice points; and Part 3 provides an introduction to band theory and its applications including a chapter on imperfections.

March 1968, about 450 pp., approx. \$11.50

PRINCIPLES OF RELATIVITY PHYSICS

By James L. Anderson

Stevens Institute of Technology

This text provides a comprehensive account of the current work being done in the field of relativity theory with emphasis on its relationship to current physics research. Written for the graduate student, it is designed for either a one or two semester course, and is valuable as a reference work for mathematicians, researchers and physicists. Professor Anderson presents an expanded treatment of the relativistic systems of particles, and stresses the role of symmetry in time-space theories with regard to foundations and applications.

March 1967, 484 pp., \$14.75

ACADEMIC PRESS
NEW YORK AND LONDON
111 FIFTH AVENUE, NEW YORK, N. Y. 10003