

Elementary Plasma Physics

by Lev A. Arzimovich

This book interprets fundamentals of plasma physics, and discusses methods of plasma processes as well as methods of analyzing such processes.

1965. 188 pages. Paper, \$2.25

Electromagnetic Fields and Interactions

by Richard Becker, ed. by Fritz Sauter

Volume I, Electromagnetic Theory and Relativity

1964. 439 pages. \$9.50

Volume II, Quantum Theory of Atoms and Radiation

1964. 403 pages. \$9.50

The World of Elementary Particles

by Kenneth W. Ford

The contemporary picture of the infinitesimal world of elementary particles, and the radical new concepts and twentieth century ways of thinking are covered in this perceptive introductory text.

1963. 262 pages. Paper, \$2.95

Atomic Migration in Crystals

by L. A. Girifalco

"... a remarkably readable account of diffusion processes in simple solids... a well-written, logically developed, non-ponderous little gem." O. C. Simpson, in *Nuclear Science and Engineering*.

1964. 162 pages. \$3.50

To be published Spring 1966...

Atomic and Nuclear Physics

by Derek L. Livesey

Designed primarily for undergraduate use, this text presents a balanced account of atoms, nuclei, and high-energy particles.

1966. *In press.*

Physical Science

by William A. Rense

In this non-mathematical approach to the physical sciences, emphasis is on the development of physics and its application to natural phenomena.

1965. \$8.50



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end of most chapters. For example, Hertz's experimental verification of the existence of electromagnetic waves previously theoretically predicted by Maxwell is not mentioned. In addition, this book contains few experimentally measured values of the electric and magnetic properties of real materials.

In the first thirteen chapters of this book Professor Cheston has presented in a straightforward manner the basic elements of nonrelativistic electromagnetic theory. By doing so he has written a good textbook for a conventionally theoretically oriented course in elementary electromagnetic theory.

EMPHASIS ON THE PRACTICAL

ATOMIC THEORY OF GAS DYNAMICS. By J. W. Bond, K. M. Watson and J. A. Welch. 518 pp. Addison-Wesley, Reading, Mass., 1965. \$16.75.

by Kurt E. Shuler

The subject matter of the book and its interdisciplinary aspect can best be exhibited by listing the chapter headings: Thermodynamic Properties of a Gas, Shock Hydrodynamics, Continuum Hydrodynamics, Atomic and Molecular Physics, Equation of State, Kinetic Theory of Gases, General Theory of Transport Processes and Hydrodynamics, Dissociation and Ionization in a Gas, Kinetic Theory of Transport Processes in Multicomponent Gases, Radiation Transport Theory, Opacity, Radiation Transport Applications, and Shock-Front Structure.

Word of mouth comments concerning this book which have come to the attention of the reviewer have in general been negative. This is particularly true of the academically oriented component of the scientific community. If one considers, however, the audience to which this book is specifically addressed and the difficult and complex interdisciplinary problems with which this audience is faced, such a negative attitude is not justified. This reviewer, who is some-

what familiar with these problems through his own involvement with defense-oriented science, considers it to be a very useful contribution—provided that certain caveats are kept in mind.

The preface clearly states that the book was written for students and workers in the fields of supersonic aerodynamics, rockets and nuclear weapons, and allied defense-oriented interdisciplinary subjects. As also pointed out in the preface, much of this material has not so far been available in book form—and certainly, the reviewer would add, collected for ready reference in one book. Additional features emphasized by the authors are the stress on applications to real problems and the inclusion of extensive data on atomic physics. Bearing in mind the announced intentions and contents the reviewer feels that the authors have produced a useful survey of atomic physics and gas dynamics and a useful primer on the application of some of the more elementary aspects of atomic and molecular physics and gas dynamics to "practical" problems.

Two caveats, however, should be noted. The reviewer finds it difficult to believe that this book is "suitable as a textbook for graduate students..." For that, the book by its announced primary purpose does not have sufficient depth of coverage and critical evaluation in any of the specific topics treated. This comment leads to a second, which is that thoroughness, critical discussion, and rigor have often been subordinated to the objective of obtaining an answer. There is nothing wrong with that if the primary objective is to obtain some reasonable solution to a practical problem—*provided* that the student or practitioner is constantly aware of the limitations, approximations, subtleties, and pitfalls that may be involved in applying some particular result to his problem. If reader John Doe does not already have the background for such critical evaluations he may be misled into thinking that he knows the answer instead of an approximation whose validity needs further investigation. The user would be well advised to do extensive collateral reading in the stand-

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Kurt E. Shuler is a senior research fellow at the National Bureau of Standards in Washington.

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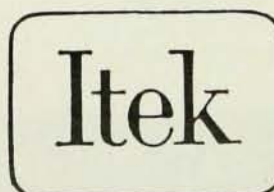
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January 1966 768 pp. \$9.95

STATISTICAL PHYSICS

Edward A. Desloge, *Florida State University*

This basic text on concepts and techniques of statistical physics emphasizes theory and techniques rather than application; hence is adaptable to courses in chemistry, physics or mechanical engineering. Puts strong emphasis on kinetic theory.

April 1966 448 pp. \$14.00 tent.

ELEMENTS OF THERMOSTATISTICS

Revised edition of *Elements of Statistical Mechanics*
Dirk ter Haar, *Clarendon Laboratories, Oxford, England*

This basic text for a senior or first-year graduate course in statistical mechanics, physics or chemistry, combines statistical mechanics with quantum mechanical grand ensembles.

May 1966 288 pp. \$9.95 tent.

QUANTUM MECHANICS

A. A. Sokolov, Yu M. Loskutov, and I. M. Ternov,
all of Moscow State University
Translated by Scripta Technica, Inc.

A lucid, comprehensive, and systematic exposition of the fundamentals of quantum mechanics, including the latest developments in the field and their applications.

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ard texts and treatises listed at the end of each chapter.

The reviewer wants to emphasize again that in his opinion the authors have provided a real service in bringing together in one book such a wealth of topics and in orienting their presentation to applications and to the solution of problems in the real world of atomic physics and gas dynamics.

TECHNICAL MAN'S HANDBOOK

APPLICATIONS DES ONDES HYPER-FREQUENCES ET INFRAROUGES A L'ETUDE DES PLASMAS, By R. Papoulet and J. Balazard. 145 pp. Dunod, Paris, 1965. Paper 19F.

by *Herbert Malamud*

I found the book rather disappointing for several reasons. The discussion of microwave methods is rather broad, covering waves in free space (including the methods used for plasmas with spatial density variations), methods in resonant cavities and wave-guides, and diffusion of EM waves through plasmas. Bremsstrahlung and gyromagnetic radiation as well as multipolar resonance waves are also covered, as are, in general, interference techniques. The interferometer method using lasers is barely mentioned, though references are given to the literature.

My quarrel with the book is two-fold. First, a book giving equal billing in the title to infrared and microwave should give much more inside space to infrared methods than this one does. All of the recent methods using electron and ion scattering of laser light are neglected, in spite of the fact that these methods contain (perhaps unrealized) potentialities for diagnosis. But these methods, more recently developed than microwave methods are less well reported in books as yet, and may thus be expected to be more interesting to researchers, than the more venerable microwave methods.

Second, in what is covered, the authors quote equations, describe the conditions under which they may be applicable, and go on to the next subject. These equations are not derived and this of course makes the

book nearly useless for tutorial purposes. This is not to criticize its definite value as a reference for workers in the field, of course, but it does limit the audience to which it might otherwise appeal.

I would have preferred a longer book, specializing in either microwave or infrared methods, rather than a technical man's handbook which tries to cover both.

But then, who is to say that my preference is that of the audience to which the authors wish to appeal? My penchant for tutorial books could be interpreted (unkindly) to show that my years working in plasma physics have not taught me enough. And the omission of the latest in infrared diagnostics could be excused on the grounds that these methods are not yet developed to the point of being practical.

The book does not contain a subject or author index. What excuse can one find for this?

* * *

Herbert Malamud, who is associated with the Radiation Research Corporation, has written extensively on the physics of plasmas and gases.

FERMI SURFACE GEOMETRY

THE DYNAMICS OF CONDUCTION ELECTRONS. By A. B. Pippard. 150 pp. Gordon and Breach, New York, 1965. Cloth \$4.95, paper \$1.95.

by *Gerald G. Johnson, Jr.*

With the publication of this book, Dr. Pippard, who pioneered investigations of the detailed Fermi surface of copper, has written a reference that should certainly find its way into the hands of every physicist interested in the Fermi surface. The author has skillfully combined the description of these measurements with sophisticated mathematical methods, to give a comprehensive reference for the topic. The book is unique, however, in at least one respect—the cost, which is about one third that of other comprehensive references. It is certainly a relief to

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The reviewer is a physicist with the Materials Research Laboratory of The Pennsylvania State University.

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