persistent assertion that the conjugate of position is velocity, instead of momentum.

The book is perhaps more for living with and dipping into than for reading only once as a whole. The various introductions are both program notes and summaries, and as such, should be read both before and after their corresponding collections of excerpts.

Some of the excerpts are long-winded to the point of being tedious, but others provide many occasions for delight: Avicenna's neat arguments against Aristotle's theory that an arrow continues its flight because the air pushes it; the cogency and sheer exuberance of selected high spots of Galileo's arguments in dialogue form; Oersted telling with amazement that the effect of an electric current on a magnetic needle persists even when one interposes glass, wood, water, porphyry and the like; Faraday at his most charming as he tells of lines of force and muses about gravitation; Torricelli puncturing the belief that Nature abhors a vacuum; an outstanding expository article by Maxwell on action at a distance; Mach in a subtle discussion remarking powerfully that phrases such as "perforated cylinder" are self-contradictory; Heisenberg's extraordinarily lucid account of the Copenhagen interpretation of quantum mechanics, and a surprisingly uncharacteristic Pauli excerpt that aptly brings the text to a close. These are only a small sampling of the pleasures to be found in this book.

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Fusion Reactor Physics: Principles and Technology

T. Kammash
495 pp. Ann Arbor Science Publishers, Ann Arbor, Mich., 1975. $29.50

The emerging energy crisis, combined with encouraging experimental results, has resulted in increased emphasis on and excitement about research directed at the development of fusion power. Large-scale experiments to demonstrate energy breakeven for both magnetic and inertial confinement are planned for the late 1970's, which—if successful—will signal the start of expanded engineering and technology studies aimed at commercial power by the year 2000.

In this setting, it seems timely that Terry Kammash's text, *Fusion Reactor Physics: Principles and Technology*, provides the first comprehensive treatment of both plasma and engineering aspects of fusion reactors. As such it brings together in one volume a mass of information that was previously scattered throughout the recent literature, conference proceedings, and so on. (Although older texts consider some reactor-related aspects, their main emphasis is on basic plasmas and laboratory experiments. Thus, there is little overlap of material or even topics.) While one might quarrel with some aspects of the book and the selection of material, this pioneering effort deserves a place on the bookshelf of plasma physicist and reactor engineer alike. Simultaneously, it should prove to be a valuable class text.

Roughly at the level of the senior or beginning graduate student in engineering or physics, the material is the outgrowth of several courses on fusion taught by the author at the University of Michigan. Having also been a very active researcher in the field for over a dozen years, Kammash has developed the insight and ability to identify and analyze problems drawn from a wide variety of areas.

In addition to several chapters on general background, there are chapters on various methods for heating, dynamics, control, neutronics, radiation damage, heat removal, and various design and environmental considerations. Also, separate chapters are devoted to fission–fusion hybrid systems and inertial confinement.

With such wide-ranging topics (and so few pages of text), this book might, at first glance, be viewed as a survey of the field. This is not entirely true, however, because in most areas Kammash identifies a specific aspect of the problem and then treats it in considerable detail. Thus, under the topic of neutral-beam heating, an extensive development of ion slowing in plasmas is provided; under dynamics and control, the so-called "temperature instability" is analyzed; under radiation damage, atom transport and sputtering theory are developed at length. For classroom use, this approach has the advantage that the student is provided with a fundamental background in select areas. Further, because much of the material is presented at a basic level, it is not likely to be quickly outdated.

There is the danger, however, that the overall perspective of some topics could be lost by the inexperienced reader, since key problems not selected for detailed treatment may be overlooked. For example, considerations associated with charge-exchange losses, trapping, beam-induced instabilities, and the entire ion-source and neutralization system are slighted in the discussion of neutral beams. The chapter on thermal efficiency and waste heat concentrates on the role of direct conversion in mirror systems rather than bringing in a broad picture of Tokamaks and laser fusion. Moreover, the lack of problem sets complicates use of the material as a readymade classroom text. Still, these points are relatively minor when the difficulties of producing a pioneering book of this sort are considered.

Kammash's text must be viewed as a remarkable volume to cover, as well as it does, such a new and rapidly-changing field. With its concentration on basic and established aspects of the various topics, this text should possess a significant and long-standing impact.

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Electrical Conduction in Solid Materials

J. P. Suchet
213 pp. Pergamon, New York, 1975. $14.00

Metal–Insulator Transitions

N. F. Mott
278 pp. Barnes & Noble, New York, 1974. $22.50

It is a signal event when a book appears by a man who has so fundamentally influenced our understanding of matter as has Sir Nevill Mott. In this instance, his book centers on the nature of insulating and metallic states as well as upon the transitions between them, the subject of much of Mott's attention during the past several years. He discusses at length those transitions to the insulating state that arise from the interactions among electrons commonly called the "Mott transition." He also discusses the transition due to band structure, which can be understood entirely within a one-electron framework. These have the same physical origin as the level crossings in molecules that have been associated with the "conservation of orbital symmetry" by Robert Woodward and Roald Hoffmann. Mott discusses Anderson localization in disordered systems, magnetic transitions, and of course the metal–insulator transition in transition-metal compounds. Perhaps the only transition omitted is that due to phonons, for example the self-trapping of a hole to make it nonconducting.

The book is definitely not for the novice, nor was it presumably intended to be. If the reader does not begin with a basic understanding of Brillouin zones he will not understand the description