BOOK REVIEWS

Selection of books for review is based on the editor's opinions regarding possible reader interest and on the availability of the book to the editor. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.

Controlled Nuclear Fusion—Fundamentals of Its Utilization for Energy Supply

Authors J. Raeder, K. Borass, R. Bünde, W. Dänner, R. Klingelhofer, L. Lengyel, F. Leuterer, M. Söll

Publisher John Wiley & Sons, Inc., Somerset, New Jersey (1986)

Pages 316 (illustrated)

Price $100.00

Reviewer Clifford E. Singer

This book is a translation of *Kontrollierte Kernfusion*, written in 1980. Despite the delay in translation, the book remains a timely summary of many aspects of tokamak physics and engineering. Some of the articles may also be of interest to those working on reactor concepts other than tokamaks. These include articles on pellet injection (by L. Lengyel), safety (W. Dänner), and fuel reserves (R. Bünde).

Most of the book is devoted to a survey of the main components of a tokamak reactor. These include articles on plasma physics (K. Borass), plasma heating (R. Klingelhofer and F. Leuterer), first walls and blankets (W. Dänner), magnet systems (M. Söll), and reactor design and balance of plant (R. Bünde et al.). For a collection of articles by different authors, the material is remarkably well integrated and proceeds without abrupt changes in style, emphasis, or notation. It is also tolerably well translated and adequately and attractively illustrated. It, therefore, has advantages over a similar compendium edited by Dolan, and over other less well-integrated collections of articles on tokamak physics and engineering.

Despite these advantages, *Controlled Nuclear Fusion* has a major drawback in common with many other surveys and texts on practical aspects of fusion energy. It fails to ground the core material on tokamak physics and engineering either on first principles or references easily understandable by newcomers to the field. The reader, therefore, needs to know the field already to really understand the material. But if the reader already knows the field, why is he reading this book? This is not a reflection on the seriousness of the authors' efforts but rather on the state of tokamak research. Major experiments and design studies have evidently so consumed the time of experienced workers that there is a great shortage of rigorous but comprehensible review articles that should serve as the basis for such a text.

In summary, the book by Raeder et al. should serve as a useful supplementary text for courses on controlled fusion and a useful enough reference to justify its purchase by researchers and instructors active in the various fields of tokamak research that it covers. Despite the recent publication of a number of very good efforts, the definitive, self-contained, introductory text on fusion reactor design and a more widely useful reference work for tokamak researchers remain to be written.

Clifford E. Singer received his PhD at the University of California, Berkeley. He has worked on the theory and applied physics of plasma transport in tokamak experiments and reactors at Princeton Plasma Physics Laboratory (and the University of Illinois) since 1977. He has published studies of space and planetary physics, interstellar propulsion and communication, and molecular biology and evolution. He is a fellow of the British Interplanetary Society.

Introduction to Fusion Energy

Author J. Reece Roth

Publisher Ibis Inc., Charlottesville, Virginia (1986)

Pages 650 + xii

Price $35.00

Reviewer Chan K. Choi

This book is an introductory level textbook on fusion for college juniors and seniors with emphasis on magnetically confined plasmas. This is a welcome addition to existing fusion textbooks at this level. It covers quite effectively not only the basic physical processes on fusion-related plasmas and the major fusion reactor concepts, but also describes quite well the alternate confinement approaches including many useful applications.

The first four chapters introduce the basic plasma