

BOOK REVIEWS

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



Calculational Methods for Interacting Arrays of Fissile Material

<i>Authors</i>	A. F. Thomas and F. Abbey
<i>Publishers</i>	Pergamon Press, Inc.
<i>Pages</i>	127
<i>Price</i>	\$13.50
<i>Reviewer</i>	Kent F. Hansen

When I received this book for review I looked forward eagerly to learning something about the techniques and methods used in this important area. I have never studied such problems and was interested to see how the methods and procedures of numerical analysis were applied. I have completed the review with mixed feelings, and certainly without the insight I had hoped to obtain. The general concern that I have is the uneven pace of the material. The introductory matter is very condensed, such that one does not obtain a clear overview of the techniques and procedures useful in the field. On the other hand, the third chapter dealing entirely with simple hand

methods is exhaustive in detail. It shows that the authors have a profound awareness of the work that has been going on in this area for a long time. Obviously, the simple hand methods have evolved from precomputer days and, combined with experimental results, have led to reasonably good conservative procedures dealing with interacting assemblies. I thought the third chapter was the most interesting and rewarding portion of the book. However, the fourth chapter which deals with the Monte Carlo method is very incomplete, very sketchy, and provides no insight into the problems of errors associated with the method, variance reduction techniques, and all the other aspects of Monte Carlo procedures which are crucial to its understanding and use.

Thus, the difficulty is that one has the feeling that computer methods are rarely used in the business, or are used only as a check on experiments and hand methods. In point of fact, of course, computers have become much larger, more versatile, and much faster. Thus, problems which were beyond machine capabilities in the past can now be done on a relatively routine basis. If the objective of the book is to provide newcomers to the field with an overview of the state-of-the-art and the state-

of-the-science, then I feel the book has not succeeded. There is certainly a good bit of material on the state-of-the-art, i.e., the hand methods. But there is an unacceptably short discussion on the state-of-the-science.

This book is one which if I saw just the cover I would be tempted to buy for my library. However, I would feel that I had been short-changed on a very important part of the subject. In general, my recommendation is that for persons who want to learn the hand methods the book is admirable. For those who can see to the future, it is clear that machines will take over more and more of the calculating burden in which case this book is neither a good text nor a good reference.

I should add that I believe the book is well written, the authors have taken reasonable care in editing the text, and that they certainly understand well the area in which they are specialists.

Kent F. Hansen is professor of nuclear engineering at Massachusetts Institute of Technology. His areas of specialty are reactor mathematics and computation, and his teaching and research activities are related to methods of reactor core analysis and design.