theory that are not found except as scattered throughout the literature. This book could be used as a text or main reference book in a course in advanced reactor theory. Problems are provided at the end of each chapter to test the understanding of the student and an extensive list of excellent references are given at the end of each chapter to supplement the reading material. If this text were to be used as a text book, adequate coverage of the material would require at least two semesters.

There are ten chapters in the book. The first chapter considers the derivation of the neutron transport equation from simple balance considerations and the last two chapters treat reactor dynamics.

The derivation of the transport equation is followed by a discussion of its limitations and the general methods of solution. Chapter 2 introduces the reader to the solution of the one-speed transport equation with emphasis on exact methods using Case's method of separation of variables and singular eigenfunctions.

While the emphasis in Chap. 2 is on analytical methods of solution to the one-speed transport equation, Chap. 3 treats the same problem using numerical methods. Difference equations are derived for the diffusion equation in both one-and two-dimensional rectangular geometries.

Multigroup methods are then discussed in Chap. 4 with emphasis on diffusion theory. The problem of obtaining suitable multigroup cross sections is discussed, although not in sufficient detail for the average reader to understand in depth the theory and numerical analysis of present reactor codes for preparing group constants.

A fairly brief treatment of discrete ordinates and S_n methods is provided in Chap. 5, which comes as somewhat of a surprise because of the strong emphasis on this method of solution in present day research.

The adjoint equation with its application to perturbation theory and variational methods is discussed in Chap. 6. Relevant application of both techniques are given which aid to a better understanding of the theory.

Chapter 7 provides a fairly comprehensive treatment of neutron thermalization. A knowledge of quantum mechanics is essential to a more complete understanding of this section. There are 123 references given at the end of this chapter; therefore, anyone studying thermalization theory in depth can consult the references for complete details of the derivations and an in-depth understanding of the material.

Resonance absorption is treated in Chap. 7 with 130 references provided at the end of this chapter. This reviewer succeeded in extracting certain parts of Chap. 8 into a second semester course in reactor theory at the undergraduate level, thus introducing the students to problems of resonance absorption in homogeneous and heterogeneous systems.

Finally, in the last two chapters reactor dynamics is treated, Chap. 9 studying the point reactor model and Chap. 10 treating spatial reactor dynamics. This last chapter treats the important problems of xenon oscillations and long-term reactor burnup.

The Appendix provides a discussion of some nonelementary mathematical functions used more or less extensively in the body of the text.

In summary, this book is a useful addition to the worker in reactor theory. The writing style and format is well presented which is typical of previous writings of these authors. The content of the book is extensive although there are numerous places where the development is not as complete as one might desire. Normally adequate references are cited for a more thorough treatment of the subject under discussion.

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Reviewer Stanley J. Malsky

Directory of Whole-Body Radioactivity Monitors

(1970 Edition: International Atomic Energy Agency, Vienna, 1970)

Pages 900

Price $25.00

This directory should be of interest to health, medical, and nuclear physicists; architects; administrators of whole-body counting facilities; and instrumentation and construction engineers.

The data as reported in this world directory were obtained from persons operating (182) or having advanced (24) plans for the operation of whole-body counters and ancillary systems.

The present directory is to be supplemented with additional information as the need develops for new information or systems.

The directory makes use of floor plans, tables, charts, and lists of and types of equipment in use for each of the establishments presented therein. Data sheet information on individual monitors is broadly defined into the following main sections:

1. general data
2. methods
3. monitoring room specifications
4. detectors and geometry considerations
5. ancillary equipment
6. calibration data
7. shielding and room dimensions
8. heating, cooling, ventilation, etc.

Each of the main categories is subdivided into specifics as related to each laboratory.

Uses of the monitors include human-natural activity studies, human-artificial activity studies, and animal, food, and physical studies.

The detailed and specific information contained in this directory