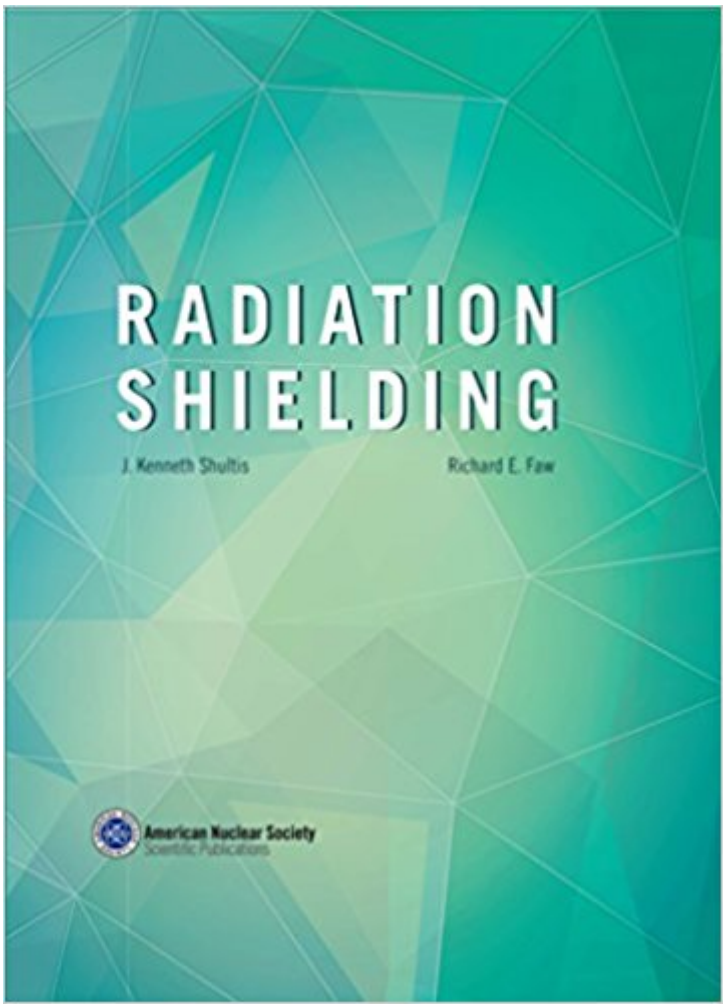
Radiation Shielding



Synopsis

3 Mile Island. Chernobyl. Nuclear meltdowns that can spell disaster for decades to come. For a number of professions including nuclear engineering, environmental engineering, radiology, and space physics, the most hazardous aspect of the job is the proper handling of radioactive material and the assessment of radiation doses. This book provides an understanding of the principles and techniques used in modern radiation shield design and analysis. --This text refers to an out of print or unavailable edition of this title.

Book Information

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Customer Reviews

This edition presents in a more unified fashion the principles and techniques of performing radiation shielding calculations. It attemps to present as much current data and information as possible. The emphasis is on the principles behind many techniques used in various aspects of shield analysis. --This text refers to an out of print or unavailable edition of this title.

worst radiation book ever, attix does a MUCH better job!author does not explain anything. material which should have been covered in 40 pages is condensed to 5-8 pages in each chapter...don’t buy unless you can’t survive your class without this book.

This textbook has a lot of information, but it is not a good teaching book. I had one of the authors as a professor for a Radiation Protection and Shielding class, and although he definitely knows his

stuff, he teaches out of this book. The only thing I got out of this book is how to derive equations. Using this book alone, I couldn't tell you where to use the final equations or how to even apply them or the concepts in the book to a real life problem. There are no examples on how to solve some of the end-of-chapter problems, which are trials in themselves (I had no prior knowledge in this subject before taking the class that used this book). This book's failing is lack of applications of the concepts and equations provided. This book doesn't belong in an undergraduate class. I give it two stars simply because it contains a good deal of information. Bottom line though, it doesn't show you what to do with the information. I had a 4.0 in nuclear engineering until the class that used this textbook.

Hoi Ianu, hoi Ianu -- Woe unto us, woe unto us -- there are, as yet, no truly educational, useful, practical textbooks from which to learn the discipline of radiation shielding.This book by professors Shultis & Faw is a valuable reference work, but not a practical textbook to teach a course on radiation shielding from. I have taught postgraduate modules in Radiation Shielding, Radiation Protection and Nuclear Physics for Nuclear Engineers, annualy since 1991, and this textbook is simply not an ideal teaching tool.Like most other books on radiation transport & shielding, this book derives, with great travail of soul, a rather bewildering succession of hundreds upon hundreds of usually approximate, analytical formulations to enable "approximate calculations by hand" of radiation behaviour, radiation attenuation, dose rate, and more. In end-of-chapter exercises, students are then required to apply these approximate, inaccurate analytical expressions to solve an equally bewildering variety of problems with approximate manual calculations, in order to gain experience in the subject.The real-life situation in the 21st century, is that shielding analysts use powerful codes running on fast digital computers to solve radiation transport and shielding problems. The practicing shielding analyst therefore requires the following knowledge and skills:1) A broad, encyclopedic mastery of the physics concepts that govern ionising radiation emission, radiation transport and radiation dosimetry;2) A broad, encyclopedic mastery of the characteristic abilities of engineerinmg materials available for radiation shielding;2) The ability to model radiation transport problems using a range of state-of-the-art radiation transport codes, e.g. SCALE 6.2 and MCNP6 as well as material activation codes such as FISPACT-II.Because powerful and accurate radiation transport codes are available, it is not particularly meaningful to teach students a series of rather useless approximate analytical techniques. These techniques were valuable in the period 1940 to 1975, but have become obsolete and therefore rather irrelevant. To me, a parade of approximate formulas are simply irritating. The radiation shielding analyst who is employed in the nuclear industry, performs analyses and writes reports that become technical addenda to "License

Application Safety Cases" submitted to TOUGH nuclear safety regulators. Nuclear Safety Regulators will NOT accept reports that employ old-time approximate formulas. No, the regulator wants analysts to use MCNP, FISPACT-II, MONACO, KENO, ORIGEN and ENDF/B-7.1 cross-section data. Not vintage model approximate analytical formulas. The parade of such formulas in this textbook, may be seen as an educational exercise, but it is NOT directly useful training for a Nuclear Safety Analyst working in a post-2015 world, who has to perform calculations at a standard acceptable to TOUGH Nuclear Safety Regulators.The preferred methodology to be followed in any modern course on Radiation Transport & Shielding is as follows:1) Guide the student to understand and become highly skilled in the foundational concepts of the transport of ionising radiation. A conceptual, encyclopedic mastery of the subject is required to guide the practicing shielding analyst.2) Present a clear formulation of the physics principles underlying radiation transport and the characteristic shielding abilities of important materials;3) Give the student a feeling of how radiation transport codes work, by carrying out some steps of numerical solution techniques by manual computations. Let them write a simple 1-D, 1-group discrete ordinates code, a simple point-kernel code, etc.4) Expose students to radiation transport codes used in the nuclear & radiation industry, notably SCALE (MONACO, ORIGEN, KENO), FISPACT-II and MCNP.5) Teach and guide the student to begin building up a "toolbox" of calculational techniques, using e.g. MathCAD, MatLAB or Mathematica. Such a calculational "toolbox" is one mark of a professional scientist. The moment a topic is mastered, the calculations involved in the analysis should be coded in e.g. Mathematica and be added to the scientists' calculational "toolbox."I present a 2-year In-House Training course in Computational Radiation & Reactor Analysis, to MSc & M.Ing graduates who start working in the Nuclear Safety Sector. Unfortunately, I can not use this Shultis & Faw textbook directly, because it is a bit of a museum piece. On the other hand, this same two gifted professors wrote an EXCELLENT "Introduction to MCNP" lecture, which is directly useful. Their textbook needs a total overhaul to make it relevant and directly useful, as we approach 2020. Rogue states and states driven by irrational religious apocalypticism, may use nuclear weapons in acts of war before the year 2030 (may it never be...) and then knowledge of radiation shielding, radionuclide transport and effect mitigation will become essential survival skills.(Physicists and applied mathematicians who develop radiation transport codes, of course, do need to master the numerical techniques required to solve radiation transport problems, in detail. Special textbooks deal with these topics.)

Having had the authors as professors while getting my nuclear engineering degree, I can assure

you that these are two professionals that know what they are talking about. The book is an excellent reference for anyone involved in radiation shielding. If you are teaching a class related to this, you must have this book. The book presents a very thorough technical discussion of all aspects regarding radiation shielding.

This book provides an excellent overview of modern radiation shielding analysis. It includes a very solid introduction to concepts of ionizing radiation and radiation shielding. All references are were very much up-to-date and a lot of attention is being paid to advanced techniques. The book is a must for anyone who is or will be involved in serious radiation shielding engineering.

I have read 'Radiation Shielding' from cover to cover,and I must say that Shultis hit the nail on the head for almost every question I wanted answered.This book was very helpful in that it provided great detail for shielding procedures, step by step,unlike many other books I read.The only problem I found with this textbook is that the binding on it is weak,and comes off easily. Plus the pages have a strong smell of sulfur(fart) .This was probably due to a problem with the manufacture of the paper,but don't worry,it's not that bad.Thumbs up.Great book.