

BOOK REVIEW

Nuclear Physics for Engineers and Scientists: Low Energy Theory with Applications including Reactors and their Environmental Impact. S. E. HUNT. Ellis Horwood Ltd, Chichester, U.K. (1987) £51.50.

This book may be considered one in a series of texts, most of them published in the U.S.A., that have as their goal to introduce engineers and scientists to nuclear physics and nuclear engineering. What sets this book apart from the rest is the much more detailed treatment of nuclear physics and neutron physics. Almost one half of the book is devoted to basic nuclear physics, with some emphasis on neutron interactions and the interaction of other nuclear radiation with matter. Of the remaining half, one third is given to nuclear instrumentation, i.e. detectors and accelerators, while the other two thirds treat nuclear technology, both fission and fusion, as well as possible effects on the environment.

From the point of view of clarity of exposition, the book is well written. The depth of coverage is quite appropriate to the goal of the text—to give a first introduction to nuclear physics for those interested in nuclear energy production and its commercial and environmental aspects. However, in a number of instances, a lack of numerical examples or of tabulations of representative values was felt by this reviewer. In addition, the book would gain by the addition of a list of more advanced or more comprehensive texts for further study at the end of each chapter.

There is also one major drawback to the book in its present form. Numerous errors were left undiscovered or uncorrected in the first edition of the text. Many of these are obvious to the informed reader, but they make the text almost useless to the novice seeking introduction into an unknown area of science and technology. An error which even the layman could easily identify is the mislabelling of the page headings on even-numbered pages for the entire Chapt 13, where “Nuclear fission” has been printed instead of “Nuclear fusion”. At the other end of the spectrum of confusing mistakes is a relation between units of dose equivalent and absorbed dose found on both p. 193 and 194: by definition of the units and parameters involved, the equality $1 \text{ Sv} = 1 \text{ Gy} \times \text{QF}$ is true for only one value of the quality factor, $\text{QF} = 1$.

A text such as Hunt’s is sorely needed, since comparable introductions to nuclear physics are either out-dated or out-of-print. Hunt’s text has been skillfully put together as far as selection and depth of coverage of various subjects is concerned. It is regrettable that so little care was devoted to the elimination of errors. This may be forgivable in a scientific monograph, where most of the readers are expected to have some familiarity with the subject matter, but it severely spoils an introductory text which students tend to approach like the gospel.

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