

NUCLEAR DATA UNCERTAINTIES - I*

BASIC CONCEPTS OF PROBABILITY

by

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ABSTRACT

Some basic concepts of probability theory are presented from a nuclear-data perspective, in order to provide a foundation for thorough understanding of the role of uncertainties in nuclear data research. Topics included in this report are: events, event spaces, calculus of events, randomness, random variables, random-variable distributions, intuitive and axiomatic probability, calculus of probability, conditional probability and independence, probability distributions, binomial and multinomial probability, Poisson and interval probability, normal probability, the relationships existing between these probability laws, and Bayes' theorem. This treatment emphasizes the practical application of basic mathematical concepts to nuclear data research, and it includes numerous simple examples.

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