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Reliability: Management, Methods and Mathematics

David K. Lloyd

Myron Lipow

Reliability: Management, Methods and Mathematics. By David K. Lloyd and Myron Lipow. Prentice-Hall, Englewood Cliffs, N. J. 1962. xxii+528 pp. $11.25.

This book contains a broad and sketchy, but well referenced, survey of modern probability and statistical theory, illustrated in various reliability models. Several reliability engineering problems are carried through as case histories. The mathematical depth of the topics treated is extremely varied. While possibly useful in an engineering curriculum, its best potential seems to be for the individual reliability engineer or mathematician seeking perspective in the other's field of interest.

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Partial Differential Equations. By Bernard Epstein. McGraw-Hill, New York, 1962. x+273 pp. $9.50.

Here is one of the better recent books on the subject. The chapter headings indicate the scope: partial differential equations of first order, the Cauchy problem, the Fredholm alternative in Banach spaces, the Fredholm alternative in Hilbert spaces, elements of potential theory, the Dirichlet problem, the heat equation, Green's functions and separation of variables. In comparison with Petrovsky's well-known book *Lectures on Partial Differential Equations*, Interscience, 1954, the following points might be made ((E) denotes the book being reviewed, (P) Petrovsky's book): 1. in (E) there is no attempt to give any physical motivation while in (P) this is done quite nicely; 2. in (E) integral equations and functional analysis are treated quite thoroughly, in (P) hardly at all; 3. in (E) the main emphasis is on elliptic equations and the Dirichlet problem, while in (P) there is an extensive discussion of hyperbolic equations; 4. the aim in (E) is to introduce the reader to a variety of ideas of modern analysis via the simpler lower dimensional partial differential equations, while in (P) the methods are more "classical" and the more general cases are discussed. As an introduction to the Cauchy problems, the Fredholm alternative, Banach and Hilbert spaces, and the Dirichlet problem, this book is excellent. It would be even better with more physical motivation and "practical" problems.

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Lectures on Modular Forms. By R. C. Gunning. Annals of Mathematics Studies, no. 48. Princeton, 1962. 86 pp. $2.75.

This book is based on a course of lectures given at Princeton University during the spring semester 1959; the notes were prepared by Armand Brumer. As remarked in the Introduction there has been a resurgence of interest in the subject of modular forms and the lectures were designed as an introduction to