The translation is of high quality and no misprints were noted. The references are alphabetized according to the Russian spellings.

J. R.

12 [4.00, 5.00, 6.00].—RICHARD BELLMAN & MILTON G. WING, *An Introduction to Minimax*, John Wiley & Sons, Inc., New York, 1975, 250 pp., 23 cm. Price $18.95.

For over twenty years Bellman and Wing have devoted much effort to developing and popularizing a mathematical technique which they call the method of invariant imbedding. They have now collaborated on a textbook/monograph which gives a wide ranging exposition of what might be called the classical method of invariant imbedding. The authors view their approach as a perturbation method for general mathematical systems where the structure of the system is varied and a functional relationship is derived which describes the behavior of the system under such perturbations. For example, in the context of two-point boundary value problems for ordinary differential equations the solution is considered to be a function not only of the independent variable but also of the length of the interval of integration and of the boundary values. The related invariant imbedding equation then describes the behavior of the solution as these variables are changed. However, unlike some earlier books on invariant imbedding, this book is not restricted to boundary value problems for ordinary differential equations; instead, it is the authors' intent to provide a "toolchest of invariant imbedding methods" which will allow the reader to find the invariant imbedding formulation for a variety of applications.

The book consists of twelve chapters; nine of them deal with two-point boundary value problems for ordinary and partial differential equations. Others explore invariant imbedding for random walk problems, wave propagation and integral equations. Throughout, whenever possible the terminology of particle transport theory is used and much effort is devoted to obtaining the imbedding equations for various Boltzmann transport equations. An extensive collection of problems is provided at the end of each chapter.

The level of presentation throughout the book is fairly elementary; the emphasis is on deriving, and occasionally solving, the invariant imbedding equations through formal manipulation or on physical grounds. Indeed, it is the authors' expressed intent to avoid all "mathematical pseudosophistication" so that the book be accessible to a variety of readers.

The overall impression is not of a book with a concise new mathematical technique but of a compendium of novel applications of one and multiparameter (operator) continuation methods (with the range of integration as the key imbedding parameter). Numerical analysts, however, will likely find the book to be of limited value since the authors by choice do not explore the computational aspects of their method. Throughout, the claim is implicit that the invariant imbedding equations, which typically are of evolution type, are easier to solve than alternate formulations. This is neither true in general since the continuation may terminate prematurely nor helpful in those cases where the equations have classical solutions since numerical stability and machine memory limitations abound. There is computational and theoretical merit to the initial value formulation now associated with the name of invariant imbedding. However, the authors' uncritical exposition is not likely to dispel the reservations widely held against this method.

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