

BOOKREVIEWS

Poloshi, G.N.: *Numerische Lösung von Randwertproblemen der mathematischen Physik und Funktionen diskreten Arguments*. B.G. Teubner Verlag, Leipzig, 1966; 270 pp. + 18 fig., price 76,50 MDN.

This is a German translation of the Russian monograph entitled *Numerical solution of two- and three-dimensional boundary-value problems of mathematical physics and functions of a discrete argument*. K.D.U., Kiev, 1962.

This book describes a method for solving systems of finite-difference equations approximating partial differential equations. These systems are put in matrix form representing the difference equations with boundary conditions. With the aid of special transformations, called P-transformations, one obtains difference equations which need not to be solved by iteration but of which an explicit solution can be given. This method can be used with advantage in the case of long and relatively narrow regions.

The book consists of three chapters. The first chapter contains investigations on eigenvalues and eigenfunctions and the reduction to diagonal form of a class of matrices occurring in the representation of the difference equations in matrix form. The second chapter deals with the difference approximations to partial differential equations with not necessary constant coefficients. Successively the theory is applied to the Laplace, Poisson and biharmonic equation, the generalised heat conduction and wave equation and the equation of the transversal vibration of a bar.

Theoretical results, for instance complex solutions of equations with complex coefficients, as well as applications to special problems such as torsion problems, obtained in the period after the Russian edition appeared, are added to this German translation in the third chapter.

C. A. Slijper.

James H. Bramble, *Numerical Solution of Partial Differential Equations*, Academic Press, New York and London, 1966. 373 pages, price \$16.50.

This book contains the proceedings of a symposium on the numerical solution of partial differential equations held at the University of Maryland in 1965. The purpose of the symposium was to bring together active investigators currently doing research in both the theoretical and practical aspects of the field. The volume contains in particular papers based on lectures given by twenty invited speakers at the symposium. Most of the contributions are written in a clear style and fairly easy to read. The book gives a good impression of the state of the art in the field and can serve as a guide to further research.

E. van Spiegel.