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Abstract

The main objective of this book is the presentation of methods of finite differences for the solution of parabolic, elliptic and hyperbolic partial differential equations. The application of these methods to the solution of various practical problems is emphasized, avoiding scholastic mathematical derivations. For this reason for several fundamental methods, computer programs are presented in FORTRAN 90/95, which may be easily translated into a different computer language.

The material of the book was developed while teaching a relative course since 1980 in the post graduate program of Agricultural Engineering and Water Resources in the Department of Hydraulics, Soil Science and Agricultural Engineering of the Aristotle University of Thessaloniki.

For the completeness of the material of the book the first chapter is devoted to the short description of some methods of basic numerical analysis, which are necessary for the comprehension of the main material of the book. The reader of this book can find detailed description of these methods in the book of the same author titled "Numerical Analysis".