



## CONTENTS

CONTRIBUTORS . . . . .	vii
PREFACE . . . . .	ix
Some Aspects of the Method of the Hypercircle Applied to Elliptic Variational Problems . . . . .	1
<i>Jean Pierre Aubin and Hermann G. Burchard</i>	
The Finite Element Method for Elliptic Differential Equations . . . . .	69
<i>Ivo Babuška</i>	
On the Numerical Solution of Elliptic Boundary Value Problems by Least Squares Approximation of the Data . . . . .	107
<i>J. H. Bramble and A. H. Schatz</i>	
Alternating-Direction Galerkin Methods on Rectangles . . . . .	133
<i>Jim Douglas, Jr., and Todd Dupont</i>	
On the Difference Equations for Meteorological Prediction . . . . .	215
<i>Alan J. Faller</i>	
Further Developments in the Approximation Theory of Eigenvalues . . . . .	243
<i>Gaetano Fichera</i>	
Numerical Design of Transonic Airfoils . . . . .	253
<i>P. R. Garabedian and D. G. Korn</i>	
On the Numerical Treatment of Partial Differential Equations by Function Theoretic Methods . . . . .	273
<i>Robert P. Gilbert and David L. Colton</i>	
A New Difference Scheme for Parabolic Problems . . . . .	327
<i>Herbert B. Keller</i>	
Singularities in Interface Problems . . . . .	351
<i>R. B. Kellogg</i>	

## CONTENTS

Initial Boundary Value Problems for Partial Differential and Difference Equations in one Space Dimension . . . . .	401
<i>Heinz-Otto Kreiss</i>	
Numerical Solution of Conditionally Properly Posed Problems . . . . .	417
<i>M. M. Lavrentiev</i>	
On General Purpose Programs for Finite Element Analysis, with Special Reference to Geometric and Material Nonlinearities . . . . .	433
<i>Pedro V. Marcal</i>	
On the Theory of the Splitting-Up Method . . . . .	469
<i>G. I. Marchuk</i>	
On Classes of n-Dimensional Nonlinear Mappings Generalizing Several Types of Matrices . . . . .	501
<i>Werner C. Rheinboldt</i>	
The Finite Element Method and Approximation Theory . . . . .	547
<i>Gilbert Strang</i>	
On the Rate of Convergence of Difference Schemes for Hyperbolic Equations . . . . .	585
<i>Vidar Thomée</i>	
Some Results in Approximation Theory with Applications to Numerical Analysis . . . . .	623
<i>Richard S. Varga</i>	

