TABLE OF CONTENTS

On the Accuracy and Convergence of Implicit Numerical Integration of Finite Element Generated Ordinary Differential Equations
A.J. Baker and M.O. Soliman 1

Numerical Solutions of a Control Problem Governed by Functional Differential Equations
H.T. Banks, J.A. Burns, E.M. Cliff and P.R. Thrift 9

Digital Simulation and Optimization via Random Search Techniques
G.O. Beale and G. Cook 13

Numerical Integration of Large Scale Systems Using Separate Step Sizes
H. Blum 19

Optimization with the Parameters Constrained to a Box
R.K. Brayton and J. Cullum 25

Investigation of Ode Integrators using Interactive Graphics
R.L. Brown 33

Mathematical Software Design: Accuracy of the Numerical Solutions
T.D. Bui and B.T. Rung 39

Some Software for Stiff Systems of Differential Equations
G.D. Byrne 45

Efficient Integration over Discontinuities in Ordinary Differential Equations
M.B. Carver 51

High Accuracy Numerical Integration of Particle Orbits in a Magnetic Field
S.R. Channon 57

An Application of CSMP for General Heat Transfer Problem in Fins
S.C. Cheng and C.S. Teoh 63

On Approximating Linear Hereditary Dynamics by Systems of Ordinary Differential Equations
E.M. Cliff and J.A. Burns 67

The Use of the Hybrid Computer in the Solution of Electromagnetic Scattering Problems
E.L. Coffey, III 73

Micro-DARE BASIC/RT11
S.W. Conley 77

A Novel Finite Element Method for Two-Point Boundary Value Problems
Z.J. Csendes 81

The Simplicial Approximation Method for Choosing a Nominal Design Point
S.W. Director and G.D. Hachtel 89

Non-linear Optimisation
B. Girling 97

Curve-Fitting Techniques in Function Generation
G. Hannauer 103

Finite Element Modeling of Climatically Induced Heat Flow
J.L. Hulsey and J.H. Emanuel 111

A Numerical Technique for Solving a Class of n-th Order Orindary Differential Equations
T.C. Irby 115

Experiences in the Modular Analysis of Circuits
A.J. Jimenez 119

Simulation and Optimization Techniques Using Vector Performance Index
L.W. Kirsch and C.K. Sanathanan 123

Simulation of Distributed Microprocessor-Based Flight Control Systems
P.S. Lee and H.F. VanLandingham 131

Interactive Simulation of the Progressive Collapse of a House
P. Lötstedt and G. Dahlquist 135

Advanced Continuous Simulation Language (ACSL)
E.E.L. Mitchell 139

A Note on Semidiscretization Methods
O. Nevanlinna 147

The Special Purpose Computer-Incremental System for Solving Differential Equations
H. Seyyed Razi 151

Hybrid Computer Simulation of a Circuit Switched Network and the Effects of Adaptive Controls
F.J. Ricci 157

Implicit and Explicit Exponential Adams Methods for Real Time Simulation
J.S. Rosenbaum 165

A Universal Language for Network Simulation
T.F. Runge 169

Resolution of Non Linear Differential Equations by Multivariable Laguerre Transforms
J.P. Sagaspe 177

DSNP - A New Approach to Simulate Nuclear Power Plants
D. Saphier 181

Solving Ordinary Differential Equations for Simulation
L.F. Shampine 189

Numerical Computation of the Transient Response of Composite Lumped-Distributed Networks
W. Shewan 193

An Interval-Dependent Error Analysis for Picard-Chebyshev Iteractions
D.R. Steele 201

Digital Simulation of Nonlinear Stochastic Systems
H.F. VanLandingham and R.L. Moose 207

A Mathematical Simulation Model for Water Quality Planning in Complex Estuaries
V.L. Zitta, A. Shindala and M.W. Corey 215

Subject Index 221