

CONTENTS

Contributors	xi
Some application areas giving rise to large scale systems by S. McKee	1
The evolution of a design methodology for large simulation models using PMSP by A.J.S. Mann and A.B. Whittington	27
Software tools for time-dependent differential equations by M. Berzins, P.M. Dew and R.M. Furzeland	35
Multigrids applied to a solution technique for recirculating fluid flow problems by P.H. Gaskell and N.G. Wright	51
Conjugate-gradient-type methods and multigrid techniques for general-purpose solution packages by G. Markham	67
A view of nonlinear optimization in a large number of variables by Ph.L. Toint	83
Finite element optimisation: the use of structured automatic differentiation by L.C.W. Dixon, P. Dolan and R. Price	117
A hybrid algorithm for linear programming by G. Mitra, M. Tamiz and J. Yadegar	143
Using Fortran 8x to solve large problems by J.K. Reid	161
Optimisation techniques for large networks: gas and water by A.J. Osiadacz and D.J. Bell	175
Steady-state optimisation of large gas transmission systems by J.G. Wilson, J. Wallace and B.P. Furey	193
Methods for gas network simulation by A.E. Fincham and N.H. Goodwin	209
The short term scheduling of a hydro-thermal electricity generating system by K.I.M. McKinnon and J.T. Buchanan	229

Sparse nonlinear systems in chemical process simulation by I.D.L. Bogle and C.C. Pantelides	245
Large scale telecommunication network optimisation by V.M. Grout, P.W. Sanders and C.T. Stockel	263
Optimisation in computer aided structural design by P. Bartholomew	285
A high-pass filter for optimum calibration of observing systems with applications by A.A. Lange	311
The provision of high performance computing by F.H. Sumner	329