

Contents

Preface	xi
1. Numerical Methods for Incompressible and Compressible Navier–Stokes Problems	1
<i>M. O. Bristeau, R. Glowinski, B. Mantel, J. Périaux, and P. Perrier</i>	
2. High-speed Compressible Flow and Other Advection-dominated Problems of Fluid Dynamics	41
<i>O. C. Zienkiewicz, R. Löhner, K. Morgan, and J. Peraire</i>	
3. Finite Element Solution of Viscous Flow Problems	89
<i>J. H. Argyris, J. St. Doltsinis, P. M. Pimenta, and H. Wüstenberg</i>	
4. Time-split Finite Element Methods in Physical and Generalized Coordinates	115
<i>C. A. J. Fletcher and K. Srinivas</i>	
5. Finite Element Algorithms for Compressible Flow Computation on a Supercomputer	135
<i>L. W. Spradley, J. F. Stalnaker, M. A. Robinson, and K. E. Xiques</i>	
6. A Vectorizable Variant of a Block Incomplete Factorization Method	157
<i>O. Axelsson</i>	
7. Newer and Newer Elements for Incompressible Flow	171
<i>M. Fortin and A. Fortin</i>	
8. Penalty Approximation, Iteration, and Continuation for Navier–Stokes Problems	189
<i>G. F. Carey and R. Krishnan</i>	

9. A Three-dimensional Two-step Explicit Finite Element Method for High Reynolds Number Viscous Fluid Flow.	199
<i>M. Kawahara, H. Hirano, and Y. Iriye</i>	
10. Spin-up of an Unstratified Rotating Fluid	219
<i>F. E. Werner and R. A. Walters</i>	
11. Mixed Finite Element Methods for Accurate Fluid Velocities . . .	233
<i>R. E. Ewing, J. V. Koebbe, R. Gonzalez, and M. F. Wheeler</i>	
12. Streamline Diffusion Methods for Problems in Fluid Mechanics	251
<i>Claes Johnson</i>	
13. Streamlined Finite Elements and Transit Times	263
<i>A. C. Papanastasiou, C. W. Macosko, and L. E. Scriven</i>	
14. Self-adaptive Local Grid Refinement for Time-dependent Two-dimensional Simulation	279
<i>J. C. Díaz, R. E. Ewing, R. W. Jones, A. E. McDonald, D. U. von Rosenberg, and L. M. Uhler</i>	
15. An Adaptive p-Version Finite Element Method for Transient Flow Problems with Moving Boundaries	291
<i>L. Demkowicz, J. T. Oden, and T. Strouboulis</i>	
16. Nonlinear Analysis of Rigid Body-Viscous Flow Interaction . . .	307
<i>M. D. Olson and P. G. Pattani</i>	
17. Finite Element Method for Calculating the Horizontal Bridgman Growth of Semiconductor Crystals	321
<i>M. J. Crochet, F. T. Geyling, and J. J. Van Schaftingen</i>	
18. A High-precision Finite Element Method for Shock-tube Calculations.	339
<i>T. J. R. Hughes and M. Mallet</i>	
Index	355