

CONTENTS

| | |
|---|-----|
| CONTRIBUTORS TO THIS VOLUME | vii |
| <i>(For a note about the editor, please see page ix)</i> | |
| PREFACE | x |
| 1. On the Nature of Navier-Stokes Turbulence | 1 |
| <i>Robert G. Deissler</i> | |
| 2. Mean Velocity and Shear Stress in Two-Dimensional Turbulent Wakes | 53 |
| <i>Lars H. Hendron and Walter C. Mih</i> | |
| 3. Computation on Separated and Reattached Turbulent Boundary Layers; Part One: Development of the Theory | 61 |
| <i>Debendra K. Das</i> | |
| 4. Computation on Separated and Reattached Turbulent Boundary Layers; Part Two: Validation of the Theory | 79 |
| <i>Debendra K. Das</i> | |
| 5. A New Stochastic Particle Dispersion Model of a Turbulent Particle-Laden Round Jet | 107 |
| <i>Jianren Fan, Hua Zhao, and Kefa Cen</i> | |
| 6. Optimal Approach for the Prediction of Critical Flow | 115 |
| <i>Y. Bayazitoglu, P. D. Jones, and T. T. Lam</i> | |
| 7. Characteristics of Flow Fields in Liquid Metal Baths Due to Vertically Injected Gas Jets: A Numerical Study | 135 |
| <i>Bakhtier Farouk and Hasmet Turkoglu</i> | |
| 8. On Some Numerical Methods for Viscous Compressible Flow | 153 |
| <i>V. Swaminathan</i> | |
| 9. Grid Generation Techniques with Applications to Fluid Dynamics | 181 |
| <i>R. M. Barron</i> | |
| 10. Approximation of Boundary Value Problems Using Finite Elements | 199 |
| <i>M. Vanninathan</i> | |

| | |
|--|-----|
| 11. Boundary Condition Approximations and Accuracy in Channel Flow Analysis..... | 221 |
| <i>N. N. Abdulla and M. K. Mawlood</i> | |
| 12. Techniques for Free Boundary Problems | 233 |
| <i>A. B. Tayler</i> | |
| 13. On a Coupled System of Hyperbolic Equations Arising in Thermoelasticity | 247 |
| <i>D. S. Chandrasekharaiah</i> | |
| 14. Hyperbolic Conservation Laws | 261 |
| <i>P. Prasad</i> | |
| 15. Invariance Properties of Partial Differential Equations Via Infinitesimal Transformations | 287 |
| <i>P. L. Sachdev and V. Philip</i> | |
| 16. On the Shooting Method for Boundary Value Problems in Ordinary Differential Equations..... | 315 |
| <i>S. G. Deo and P. L. Sachdev</i> | |
| 17. Some Applications on Hodograph Transformations in Fluid Dynamics | 341 |
| <i>O. P. Chandna</i> | |
| 18. Some Applications of Self and Non Self Adjoint Eigenspaces and Simplicity of Eigenvalues to Problems in Chemical Engineering—A Pedagogical Treatment | 381 |
| <i>R. Narayanan</i> | |
| 19. Integrability and Painleve Analysis | 409 |
| <i>M. Lakshmanan and R. Sahadevan</i> | |
| 20. Order and Disorder in Nonlinear Dynamical Systems | 441 |
| <i>R. Friedrich and N. Rudraiah</i> | |
| 21. Tensor Analysis | 509 |
| <i>J. Stastna and P. N. Kaloni</i> | |
| INDEX..... | 572 |
| COMPREHENSIVE INDEX (VOLUMES 1–10) | 575 |