

Contents

1. Introduction
2. Transport equations for the Reynolds stresses
3. Closure of the transport equations for the Reynolds stresses
  - 3.1 The turbulent dissipation
  - 3.2 The pressure fluctuations
  - 3.3 The turbulent diffusion
4. The transport equations for two-dimensional flow fields
  - 4.1 The equations of mean motion
  - 4.2 The equilibrium conditions in a stationary plane shear flow
  - 4.3 The empirical energy equation
  - 4.4 The empirical relationship for the shear stress
  - 4.5 Some results of numerical calculations
5. The length scale equation
  - 5.1 The theoretical length scale equation
  - 5.2 Closure of the length scale equation
  - 5.3 The empirical length scale equation
6. The initial and boundary conditions
  - 6.1 The initial conditions
  - 6.2 The free turbulent boundary
  - 6.3 The boundary conditions on solid surfaces
7. Inductive treatment
  - 7.1 The energy equation
  - 7.2 The length scale equation
8. Similar solutions
  - 8.1 The selection of the empirical coefficients
  - 8.2 Predictions with a universal set of coefficients
9. A finite difference procedure for the initial-value problems
  - 9.1 Linearization and decoupling of the differential equations
  - 9.2 Solution of the three diagonal matrix
  - 9.3 The treatment of the free boundary
  - 9.4 Integration of the continuity equation
  - 9.5 The process of calculation
10. Conclusion
11. References