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Nota di contenuto	Introduction B.E. Launder and N.D. Sandham -- Part I. Physical and Numerical Techniques: Linear and non-linear eddy viscosity models T. B. Gatski -- Second-moment turbulence closure modelling K. Hanjalic and Jakirilic Suad -- Closure modelling near the two-component limit T.J. Craft and B. Launder -- The elliptic relaxation method P.A. Durbin and B.A. Patterson -- Numerical aspects of applying second-moment closure to complex flows M. Leschziner and F.-S. Lien -- Modelling heat transfer in near-wall flows Y. Nagano -- Introduction to direct numerical simulation N.D. Sandham -- Introduction to large-eddy simulation of turbulent flows J. Frhølich and W. Rodi -- Two-point closure strategies C. Cambon -- Introduction to pdf approaches in turbulence modelling D. Roekaerts. -- Part II. Flow Types and Processes

and Strategies for Modelling Them: Modelling of separated and impinging flows T.J. Craft -- Large eddy simulation of the flow past bluff bodies W. Rodi -- LES modelling of industrial flows D. Laurence -- Application of TCL modelling to stratified flows T.J. Craft and B.E. Launder -- Higher-moment diffusion in stable stratification B. Ilyushin -- DNS of by-pass transition P.A. Durbin, R. Jacobs and X. Wu -- By-pass transition using conventional closures A.M. Savill -- New strategies in modelling by-pass transition A.M. Savill -- Compressible, high-speed flows S. Barre, J.-P. Bonnet, T.B. Gatski and N.D. Sandham -- Closure strategies for reacting flows W.P. Jones -- Pdf strategies for reacting flows D. Roekaerts -- TRANS approach to convection in unstably stratified layers K. Hanjalic and S. Kenjeres -- Use of higher moments to construct pdfs in stratified flows B. Ilyushin -- DNS of separation bubbles G.N. Coleman and N.D. Sandham -- Is LES ready for complex flows? B.J. Geurts and A. Leonard -- Further developments in two-point closure C. Cambon.

Sommario/riassunto

Turbulence modelling is a critically important area in any industry dealing with fluid flow, having many implications for computational fluid dynamics (CFD) codes. It also retains a huge interest for applied mathematicians since there are many unsolved problems. This book provides a comprehensive account of the state-of-the-art in predicting turbulent and transitional flows by some of the world's leaders in these fields. It can serve as a graduate-level textbook and, equally, as a reference book for research workers in industry or academia. It is structured in three parts: Physical and Numerical Techniques; Flow Types and Processes; and Future Directions. As the only broad account of the subject, it will prove indispensable for all working in CFD, whether academics interested in turbulent flows, industrial researchers in CFD interested in understanding the models embedded in their software (or seeking more powerful models) or graduate students needing an introduction to this vital area.