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Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Preface; Contents; A Note on the Stabilised Q1-P0 Method on Quadrilaterals with High Aspect Ratios; 1 Introduction; 1.1 The Finite Element Approximation; 1.2 Numerical Results; 1.3 Conclusions; 2 Proof of Stability; Appendix; References; A Posteriori Error Estimation of a Stabilized Mixed Finite Element Method for Darcy Flow; 1 Introduction; 2 The Augmented Variational Formulation; 3 The Stabilized Mixed Finite Element Method; 4 A Posteriori Error Analysis; 5 Numerical Results; References; A Local Projection Stabilized Lagrange-Galerkin Method for Convection-Diffusion Equations 1 Introduction 2 The Formulation of the Local Projection Stabilized Lagrange-Galerkin Method; 3 Error Analysis; 4 Numerical Examples; References; Outflow Conditions for the Navier-Stokes Equations with Skew-Symmetric Formulation of the Convective Term; 1 Introduction; 2

Directional Do-Nothing Condition; 3 Existence of Weak Solutions; 4 Uniqueness of Weak Solutions for Small Data; 5 Numerical Results; 5.1 Standing Vortex; 5.2 Backward-Facing Step; References; Finite Element Approximation of an Unsteady Projection-Based VMS Turbulence Model with Wall Laws; 1 Introduction  
2 The Continuous and Discrete Problems 2.1 Variational Formulation of the Continuous Problem; 2.2 Finite Element Spaces; 2.3 A Projection-Based VMS Turbulence Model; 3 Analysis of the Discrete Model; 3.1 Technical Background; 3.2 Existence and Stability Results; 3.3 Convergence Analysis; 3.4 Asymptotic Energy Balance; 4 Numerical Experiments: Turbulent Channel Flow; 4.1 Setting for Numerical Simulations; 4.2 Numerical Results; References; Spatial Semidiscretizations and Time Integration of 2D Parabolic Singularly Perturbed Problems; 1 Introduction; 2 Spatial Semidiscretization  
5 Accuracy of General Algebraic Flux Correction Schemes References; Investigation of Numerical Wall Functions Based on the 1D Boundary-Layer Equations for Flows with Significant Pressure Gradient; 1 Introduction; 2 Governing Equations and Wall Function Modelling; 3 Numerical Solution Method Using OpenFOAM®; 4 Results; 4.1 Turbulent Boundary Layer Flow at Zero Pressure Gradient; 4.2 Flow Over a Smoothly Contoured Ramp; 4.3 Flow Over a Backward Facing Step; 5 Conclusion; References; Modified SUPG Method on Oriented Meshes; 1 Introduction and the Idea of the Method; 2 Derivation of the Method  
3 Coercivity

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## Sommario/riassunto

This volume offers contributions reflecting a selection of the lectures presented at the international conference BAIL 2014, which was held from 15th to 19th September 2014 at the Charles University in Prague, Czech Republic. These are devoted to the theoretical and/or numerical analysis of problems involving boundary and interior layers and methods for solving these problems numerically. The authors are both mathematicians (pure and applied) and engineers, and bring together a large number of interesting ideas. The wide variety of topics treated in the contributions provides an excellent overview of current research into the theory and numerical solution of problems involving boundary and interior layers. .

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