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Nota di contenuto	Preface; CONTENTS; Chapter 1: Discontinuous Galerkin for Turbulent Flows Francesco Bassi, Lorenzo Botti, Alessandro Colombo, Antonio Ghidoni And Stefano Rebay; 1. Introduction; 2. DG Solution of the RANS and k-! Equations; 2.1. Governing equations; 2.1.1. Surface boundary condition for; 2.2. DG space discretization; 2.2.1. Orthonormal and hierarchical basis functions; 2.3. Time integration; 2.3.1. Linearly implicit Runge-Kutta schemes; 2.4. Shock-capturing approach; 3. Numerical Results; 3.1. L1T2 3-element airfoil; 3.2. ONERA M6 wing; 3.3. DPWIII W1 wing; 3.4. DLR-F6 wing-body configuration 3.5. NASA 65 sweep delta wing4. Final Remarks; Acknowledgments; References; Chapter 2: Massively Parallel Solution Techniques for Higher-Order Finite-Element Discretizations in CFD Laslo T. Diosady and David L. Darmofal; 1. Introduction; 2. Schwarz Methods; 2.1. The case of two subdomains; 2.2. The case of many subdomains; 2.3. Large scale CFD applications; 3. Schur Complement Methods; 3.1. An interface problem; 3.2. Classical substructuring methods; 3.3. Approximate factorizations; 4. Neumann-Neumann Methods; 4.1. BDDC and FETI-DP; 5. Numerical Results; References Chapter 3: Error Estimation and hp-Adaptive Mesh Refinement for Discontinuous Galerkin Methods Tobias Leicht and Ralf Hartmann1. Introduction; 2. Flow Problem and Its Discretization; 3. Error Estimation

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2.3. The predictor-corrector formulation3. Beyond the Global Time Integration Paradigm; 3.1. Time-accurate local time stepping; 4. Results; 4.1. Time accuracy; 4.2. Accuracy for non-linear problems; 4.3. Application; 5. Conclusion; Acknowledgments; References; Chapter 5: High-Order Discontinuous Galerkin Methods for CFD Jaime Peraire and Per-Olof Persson; 1. Introduction; 2. Governing Equations; 2.1. The compressible Navier-Stokes equations; 2.2. Turbulence modeling; 2.3. Mapping-based ALE formulation for deformable domains; 2.3.1. The mapping; 2.3.2. Transformed equations
2.3.3. Geometric conservation law

Sommario/riassunto

This book consists of important contributions by world-renowned experts on adaptive high-order methods in computational fluid dynamics (CFD). It covers several widely used, and still intensively researched methods, including the discontinuous Galerkin, re