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Nota di contenuto	Immersed Coupling of Isogeometric Analysis and Peridynamics for Blast Fluid-Structure Interaction Simulation (Bazilevs) -- Computational fluid–structure interaction analysis of passive adaptive blades in turbomachinery applications (Castorrini) -- A note on the conservation properties of the generalized- method (A. Evans) -- Phase-field modeling for flow simulation (Gomez) -- Direct flow simulation of objects represented by point clouds (Hsu) -- Recent computational investigations of leaflet flutter in thinner biological heart valve tissues (Johnson) -- Code generation for isogeometric and immersed analysis: A review of methods and applications (Kamensky) -- Variational Multi-Scale Method for High-Fidelity Simulation of Hydrokinetic Energy Applications (Korobenko) -- Multiscale Space–Time Isogeometric Analysis of Car and Tire Aerodynamics with Road Contact and Tire Deformation: Full-Domain Computation to High-Resolution Tire-

Domain Computations (Kuraishi) -- An immersed isogeometric-RKPM framework for air-blast-structure interaction (Moutsanidis) -- Element length calculation for isogeometric discretization and complex geometries (Otoguro) -- An extended Kirchhoff–Love shell model with out-of-plane normal stress: Out-of-plane deformation (Taniguchi) -- Heart Valve Computational Flow Analysis with Boundary Layer and Leaflet Contact Representation (Terahara) -- Scan-based immersed isogeometric flow analysis (Verhoosel) -- Advanced IGA Mesh Generation and Application to Structural Vibrations (Bazilevs) -- Computational thermal multi-phase flow for metal additive manufacturing (Yan).

Sommario/riassunto

Computational fluid-structure interaction (FSI) and flow simulation are challenging research areas that bring solution and analysis to many classes of problems in science, engineering, and technology. Young investigators under the age of 40 are conducting much of the frontier research in these areas, some of which is highlighted in this volume. The first author of each chapter took the lead role in carrying out the research presented. Some of the topics explored include Direct flow simulation of objects represented by point clouds Computational investigation of leaflet flutter in thinner biological heart valve tissues High-fidelity simulation of hydrokinetic energy applications High-resolution isogeometric analysis of car and tire aerodynamics Computational analysis of air-blast-structure interaction Heart valve computational flow analysis with boundary layer and leaflet contact representation Computational thermal multi-phaseflow for metal additive manufacturing This volume will be a valuable resource for early-career researchers and students — not only those interested in computational FSI and flow simulation, but also other fields of engineering and science, including fluid mechanics, solid mechanics, and computational mathematics – as it will provide them with inspiration and guidance for conducting their own successful research. It will also be of interest to senior researchers looking to learn more about successful research led by those under 40 and possibly offer collaboration to these researchers.