



Fluid-structure interaction : modelling, simulation, optimisation /

Bungartz, H.-J. (Hans-Joachim)
Schäfer, Michael (1960 January 15-)

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Monografía

Fluid-structure interactions (FSI), that is interactions of some movable or deformable structure with an internal or surrounding fluid flow, are among the most important and, with respect to both modelling and computational issues, the most challenging multi-physics problems. The variety of FSI occurrences is abundant and ranges from tent-roofs to micropumps, from parachutes via airbags to blood flow in arteries. This volume of LNCSE contains a collection of papers presented at the International Workshop on FSI held in October 2005 in Hohenwart and organized by DFG's Research Unit 493 "FSI: Modelling, Simulation, and Optimization". The papers address partitioned and monolithic coupling approaches, methodical issues and applications, and discuss FSI from the mathematical, informatical, and engineering point of view

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with the space-time techniques -- Extending the range and applicability of the loose coupling approach for FSI simulations -- A new fluid structure coupling method for airbag OOP -- Adaptive finite element approximation of fluid-structure interaction based on an Eulerian variational formulation -- A monolithic FEM/multigrid solver for an ALE formulation of fluid-structure interaction with applications in biomechanics -- An implicit partitioned method for the numerical simulation of fluid-structure interaction -- Large deformation fluid-structure interaction : advances in ALE methods and new fixed grid approaches -- Fluid-structure interaction on Cartesian grids : flow simulation and coupling environment -- Lattice-Boltzmann method on quadtree-type grids for fluid-structure interaction -- Thin solids for fluid-structure interaction -- Algorithmic treatment of shells and free form-membranes in FSI -- Experimental study on a fluid-structure interaction reference test case -- Proposal for numerical benchmarking of fluid-structure interaction between an elastic object and laminar incompressible flow

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Autores: Bungartz, H.-J. (Hans-Joachim) Schäfer, Michael (1960 January 15-)

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Baratz Innovación Documental

- Gran Vía, 59 28013 Madrid
- (+34) 91 456 03 60
- informa@baratz.es