Contents

Laudation at the AFSI 2014 Conference Banquet Celebrating 
Tayfun Tezduyar’s 60th Birthday, Tokyo, Japan, March 2014 .............. 1 
Thomas J. R. Hughes

Part I CFD: Methods and Applications

Numerical Comparison of the Particle Finite Element Method 
Against an Eulerian Formulation ...................................................... 7 
Juan M. Gimenez, Pedro Morin, Norberto Nigro, and Sergio Idelsohn

An Implicit Gradient Meshfree Formulation 
for Convection-Dominated Problems ............................................. 25 
M. Hillman and J.S. Chen

Flow Analysis of a Wave-Energy Air Turbine with the 
SUPG/PSPG Method and DCDD ...................................................... 39 
Lucio Cardillo, Alessandro Corsini, Giovanni Delibra, Franco Rispoli, 
and Tayfun E. Tezduyar

The Advection –Diffusion Analysis of Smoke Flows Around a Body ...... 55 
Takashi Nomura, Hiroshi Hasebe, and Takehiro Kobayashi

Finite Element Computation of Buzz Instability in Supersonic 
Air Intakes ...................................................................................... 65 
V.M. Krushnarao Kotteda and Sanjay Mittal

SUPG/PSPG Computational Analysis of Rain Erosion in 
Wind-Turbine Blades ................................................................. 77 
Alessio Castorrini, Alessandro Corsini, Franco Rispoli, Paolo Venturini, 
Kenji Takizawa, and Tayfun E. Tezduyar

The Multi-Moment Finite Volume Solver for Incompressible 
Navier-Stokes Equations on Unstructured Grids ................................ 97 
Bin Xie and Feng Xiao
An Immersogeometric Method for the Simulation of Turbulent Flow Around Complex Geometries .................................................. 111
Fei Xu, David Kamensky, Vasco Varduhn, Chenglong Wang, Sean A. Wason, Bryann Sotomayor-Rinaldi, Carolyn N. Darling, Dominik Schillinger, and Ming-Chen Hsu

Part II CFD: Moving Boundaries and Interfaces
Numerical Simulation of the Behavior of a Rising Bubble by an Energy-Stable Lagrange-Galerkin Scheme................................. 129
Masahisa Tabata
A Numerical Review of Multi-Fluid SPH Algorithms for High Density Ratios ............................................................................... 139
Jan-Philipp Fürstenau, Bircan Avci, and Peter Wriggers
Self-Propulsion of a Killifish from Impulsive Starts .......................... 151
Yoichi Ogata and Takayuki Azama
New Directions in Space–Time Computational Methods ................. 159
Kenji Takizawa and Tayfun E. Tezduyar

Part III CFD: Phase-Field Modeling
Interfacial Instability of a Non-magnetized Drop in Ferrofluids Subjected to an Azimuthal Field: A Diffuse-Interface Approach .... 181
Ching-Yao Chen and Ting-Shiang Lin
Numerical Analysis of Backward Erosion of Soils by Solving the Darcy–Brinkman Equations ......................................................... 193
Kazunori Fujisawa
A Diffuse Interface Model for Incompressible Two-Phase Flow with Large Density Ratios ................................................................. 203
Yu Xie, Olga Wodo, and Baskar Ganapathysubramanian
Isogeometric Phase-Field Simulation of Boiling ................................ 217
Ju Liu and Thomas J.R. Hughes

Part IV Computer Science and HPC Aspects
How to Generate Effective Block Jacobi Preconditioners for Solving Large Sparse Linear Systems .................................................. 231
Yao Zhu and Ahmed H. Sameh
Parallel Analysis System for Fluid–Structure Interaction with Free-Surfaces Using ADVENTURE_Solid and LexADV_EMPS .... 245
Naoto Mitsume, Tomonori Yamada, Shinobu Yoshimura, and Kohei Murotani
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particle Method Simulation of Thrombus Formation in Fontan Route</td>
<td>387</td>
</tr>
<tr>
<td>Ken-ichi Tsubota, Koichi Sughimoto, Kazuki Okauchi, and Hao Liu</td>
<td></td>
</tr>
<tr>
<td>Computational Study of Aortic Hemodynamics: From Simplified to Patient-Specific Geometries</td>
<td>397</td>
</tr>
<tr>
<td>A. Lefieux, F. Auricchio, M. Conti, S. Morganti, A. Reali, S. Trimarchi, and A. Veneziani</td>
<td></td>
</tr>
<tr>
<td>An Image-Based Computational Framework for Analyzing Disease Occurrence and Treatment Outcome in Patients with Peripheral Arterial Disease</td>
<td>409</td>
</tr>
<tr>
<td>Shaolie S. Hossain</td>
<td></td>
</tr>
<tr>
<td>Part VII Fluid–Structure Interaction</td>
<td></td>
</tr>
<tr>
<td>Modal Analysis of Liquid–Structure Interaction</td>
<td>423</td>
</tr>
<tr>
<td>Roger Ohayon and Jean-Sébastien Schotté</td>
<td></td>
</tr>
<tr>
<td>A Fluid–Structure Interaction Algorithm Using Radial Basis Function Interpolation Between Non-Conforming Interfaces</td>
<td>439</td>
</tr>
<tr>
<td>Simone Deparis, Davide Forti, and Alfio Quarteroni</td>
<td></td>
</tr>
<tr>
<td>Elasto-Capillarity Simulations Based on the Navier–Stokes–Cahn–Hilliard Equations</td>
<td>451</td>
</tr>
<tr>
<td>E.H. van Brummelen, M. Shokrpour-Roudbari, and G.J. van Zwieten</td>
<td></td>
</tr>
<tr>
<td>Fluid–Structure Interaction Modeling and Isogeometric Analysis of a Hydraulic Arresting Gear at Full Scale</td>
<td>463</td>
</tr>
<tr>
<td>Ming-Chen Hsu, Chenglong Wang, Michael C.H. Wu, Fei Xu, and Yuri Bazilevs</td>
<td></td>
</tr>
<tr>
<td>Finite-Element/Boundary-Element Coupling for Inflatables: Effective Contact Resolution</td>
<td>477</td>
</tr>
<tr>
<td>T.M. van Opstal</td>
<td></td>
</tr>
<tr>
<td>Recent Advances in Fluid–Structure Interaction Simulations of Wind Turbines</td>
<td>489</td>
</tr>
<tr>
<td>A. Korobenko, X. Deng, J. Yan, and Y. Bazilevs</td>
<td></td>
</tr>
</tbody>
</table>
Advances in Computational Fluid-Structure Interaction and Flow Simulation
New Methods and Challenging Computations
Bazilevs, Y.; Takizawa, K. (Eds.)
2016, XII, 500 p. 193 illus., 158 illus. in color., Hardcover
ISBN: 978-3-319-40825-5
A product of Birkhäuser Basel