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1.8. BibliographyChapter 2. Fluid-Structure Interaction: Application to Dynamic Problems; 2.1. Introduction; 2.2. General ALE description of Navier-Stokes equations; 2.3. Fluid-structure interaction; 2.3.1. Contact algorithms for fluid-structure interaction problems; 2.3.2. Euler-Lagrange coupling; 2.3.3. Damping in the coupling; 2.4. Numerical applications; 2.4.1. Piston problem; 2.4.2. Two-dimensional slamming modeling; 2.4.2.1. Numerical approach of a two-dimensional slamming problem; 2.4.2.2. Numerical approach for rigid structure; 2.4.3. Airbag deployment; 2.4.4. Sloshing tank problem
2.4.4.1. Analytical treatment of the sloshing problem2.4.4.2. Sloshing in a rigid tank; 2.4.4.3. Frequency analysis for sloshing; 2.4.4.4. Application to a cylindrical flexible tank subjected to seismic loading; 2.5. Conclusion; 2.6. Acknowledgments; 2.7. Bibliography; Chapter 3. Implicit Partitioned Coupling in Fluid-Structure Interaction; 3.1. Introduction; 3.2. Computational fluid mechanics; 3.2.1. Governing equations; 3.2.1.1. Incompressible flows; 3.2.1.2. Inviscid flows; 3.2.2. Finite volume discretization; 3.2.2.1. Solution algorithms; 3.3. Computational structural mechanics
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Chapter 4. Avoiding Instabilities Caused by Added Mass Effects in Fluid-Structure Interaction Problems

Sommario/riassunto

This book provides the fundamental basics for solving fluid structure interaction problems, and describes different algorithms and numerical methods used to solve problems where fluid and structure can be weakly or strongly coupled. These approaches are illustrated with examples arising from industrial or academic applications. Each of these approaches has its own performance and limitations. Given the book's comprehensive coverage, engineers, graduate students and researchers involved in the simulation of practical fluid structure interaction problems will find this book extremely useful.