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	Titolo	Level Set Methods for Fluid-Structure Interaction [[electronic resource] /] / by Georges-Henri Cottet, Emmanuel Maitre, Thomas Milcent
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		Continuum mechanics
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		Continuum Mechanics
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	Nota di contenuto	1. Level Set methods and Lagrangian interfaces -- 2. Mathematical tools for continuum mechanics -- 3. Interaction of an incompressible fluid with an elastic membrane -- 4. Immersed bodies : the case of elastic bodies -- 5. Immersed bodies : the case of rigid bodies -- 6. Interaction between bodies by the Level Set method -- 7. Appendix -- 8. References. .
	Sommario/riassunto	This monograph is devoted to the study of Eulerian models for fluid-structure interaction from the original point of view of level set methods. In the last 15 years, Eulerian models have become popular tools for studying fluid-structure interaction problems. One major

advantage compared to more conventional methods such as ALE methods is that they allow the use of a single grid and a single discretization method for the different media. Level set methods in addition provide a general framework to follow the fluid-solid interfaces, to represent the elastic stresses of solids, and to model the contact forces between solids. This book offers a combination of mathematical modeling, aspects of numerical analysis, elementary codes and numerical illustrations, providing the reader with insights into the applications and performance of these models. Assuming background at the level of a Master's degree, Level Set Methods for Fluid-Structure Interaction provides researchers in the fields of numerical analysis of PDEs, theoretical and computational mechanics with a basic reference on the topic. Its pedagogical style and organization make it particularly suitable for graduate students and young researchers.