1. **Record Nr.** UNINA9910299985203321

   Titolo Fluid-Structure Interaction and Biomedical Applications / / edited by Tomáš Bodnár, Giovanni P. Galdi, Šárka Neasová

   Pubbl/distr/stampa Basel : , : Springer Basel : , : Imprint : Birkhäuser, , 2014

   ISBN 3-0348-0822-4

   Edizione [1st ed. 2014.]

   Descrizione fisica 1 online resource (580 p.)

   Collana Advances in Mathematical Fluid Mechanics, , 2297-0320

   Disciplina 510
   515.353
   530.15
   570.285
   610.28

   Soggetti Biomathematics
   Mathematical physics
   Partial differential equations
   Physiological, Cellular and Medical Topics
   Mathematical Physics
   Partial Differential Equations

   Lingua di pubblicazione Inglese

   Formato Materiale a stampa

   Livello bibliografico Monografia

   Note generali Description based upon print version of record.

   Nota di bibliografia Includes bibliographical references at the end of each chapters.

   Nota di contenuto Preface -- 1 Mathematical and Numerical Analysis of some FSI Problems by C. Grandmont, M. Lukáová-Medvid'ová, Š. Neasová -- 2 FSI in Hemodynamics by S. ani, B. Muha, M. Buka -- Hyperbolic-Parabolic Coupling in Partially Dissipative Systems by G.P. Galdi, M. Mohebbi, R. Zakerzadeh, P. Zunino -- 4 Interactions of Incompressible Viscous Fluid with Rigid Bodies by M. Hillairet -- 5 Numerical Simulation of FSI Problems of Flow in Vocal Folds by M. Feistauer, P. Sváek, J. Horáek -- 6 Data Assimilation in Computational Hemodynamics by L. Bertagna, M. D'Elia, M. Perego, A. Veneziani -- 7 Mathematical Models for Blood Coagulation by A. Fasano, A. Sequeira, T. Bodnár.

   Sommario/riassunto This book presents, in a methodical way, updated and comprehensive descriptions and analyses of some of the most relevant problems in the

context of fluid-structure interaction (FSI). Generally speaking, FSI is among the most popular and intriguing problems in applied sciences and includes industrial as well as biological applications. Various fundamental aspects of FSI are addressed from different perspectives, with a focus on biomedical applications. More specifically, the book presents a mathematical analysis of basic questions like the well-posedness of the relevant initial and boundary value problems, as well as the modeling and the numerical simulation of a number of fundamental phenomena related to human biology. These latter research topics include blood flow in arteries and veins, blood coagulation and speech modeling. We believe that the variety of the topics discussed, along with the different approaches used to address and solve the corresponding problems, will help readers to develop a more holistic view of the latest findings on the subject, and of the relevant open questions. For the same reason we expect the book to become a trusted companion for researchers from diverse disciplines, such as mathematics, physics, mathematical biology, bioengineering and medicine.