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Titolo	Patient-specific Hemodynamic Computations: Application to Personalized Diagnosis of Cardiovascular Pathologies / / edited by Lucian Mihai Itu, Puneet Sharma, Constantin Suciu
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Descrizione fisica	1 online resource (X, 227 p. 103 illus., 80 illus. in color.)
Disciplina	610.28
Soggetti	Biomedical engineering Cardiology Medical informatics Bioinformatics Computational biology Biomathematics Biomedical Engineering/Biotechnology Health Informatics Computer Appl. in Life Sciences Computational Biology/Bioinformatics Mathematical and Computational Biology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	1.Computational Modeling of the Human Cardiovascular System -- 2. The Cardiovascular System and the Coronary Circulation -- 3.Patient-Specific Modeling of the Coronary Circulation -- 4.A Parameter Estimation Framework for Patient-specific Assessment of Aortic Coarctation -- 5.Lumped Parameter Whole Body Circulation Modelling -- 6.Three Dimensional Reconstruction and Hemodynamic Information Extraction from Monoplane Angiography -- 7.GPU-based High Performance Computing: Employing massively parallel processors for speeding-up compute intensive algorithms.
Sommario/riassunto	Hemodynamic computations represent a state-of-the-art approach for

patient-specific assessment of cardiovascular pathologies. The book presents the development of reduced-order multiscale hemodynamic models for coronary artery disease, aortic coarctation and whole body circulation, which can be applied in routine clinical settings for personalized diagnosis. Specific parameter estimation frameworks are introduced for calibrating the parameters of the models and high performance computing solutions are employed to reduce their execution time. The personalized computational models are validated against patient-specific measurements. The book is written for scientists in the field of biomedical engineering focusing on the cardiovascular system, as well as for research-oriented physicians in cardiology and industrial players in the field of healthcare technologies.