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Titolo	Dimension Reduced Modeling of Blood Flow in Large Arteries : An Introduction for Master Students and First Year Doctoral Students / / by Tobias Köppl, Rainer Helmig
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ISBN	3-031-33087-0
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (244 pages)
Collana	Mathematical Engineering, , 2192-4740
Disciplina	570.151 612.1181
Soggetti	Biomedical engineering Engineering mathematics Biomathematics Mathematical analysis Fluid mechanics Biomedical Engineering and Bioengineering Engineering Mathematics Mathematical and Computational Biology Analysis Engineering Fluid Dynamics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Physiological principles of the cardiovascular system -- Modeling approaches -- Dimension-reduced models for the macrocirculation -- Numerical treatment of transport equations -- Simulation of the body's own balancing systems -- Concluding remarks -- Appendix. .
Sommario/riassunto	This monograph contains an in-depth and coherent treatment of dimension-reduced modeling of blood flows on the level of large vessels (macrocirculation). The authors reduce the complexity by combining a one-dimensional Navier-Stokes equation and a simplified FSI-concept. The influence of omitted vessels, which are subsequent to the outlets of larger vessels, is accounted for by systems of ordinary

differential equations (OD models). The target audience primarily comprises research experts in the field of biomedical engineering, but the book may also be beneficial for graduate students alike.
