Mathematical Models and Numerical Simulations for the Cardiovascular System

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Abstract

Mathematical models allow the description of the complex fluid-structure interaction which govern the blood motion and artery wall deformation under the pressure pulse. Moreover, appropriate reduction strategies can be devised to allow for an effective description of the interaction between large, 3D components, and small 1D branches of the circulatory system, as well as the simulation, control and shape optimization of assisted devices or surgical prostheses.

This presentation will address some of these issues and a few representat-Ive applications.