14th World Congress on Computational Mechanics (WCCM XIV)
8th European Congress on Computational Methods in Applied Science and Engineering (ECCOMAS 2020)
July 19–24, 2019, Paris, France

HIGH PERFORMANCE ALGORITHMS AND APPLICATIONS IN COMPUTATIONAL BIOMECHANICS TRACK NUMBER (400)

Xiao-Chuan Cai[*], **Rongliang Chen**[†], **Luca Pavarino**[‡]

[*] Department of Computer Science, University of Colorado Boulder, cai@cs.colorado.edu
[†] SIAT, Chinese Academy of Science, rl.chen@siat.ac.cn
[‡] Department of Mathematics, University of Pavia, luca.pavarino@unipv.it

Key words: Computational biomechanics, High Performance Computing

ABSTRACT

Computational modeling is used increasingly as a powerful tool to understand certain mechanical behavior of the human body, such as the dynamics of the blood flows, the shear stress on the wall of the artery, the bioelectric phenomena of the heart. Such modeling is important for the study of both healthy and diseased patients, and sometimes are useful for the planning of surgery. In this mini symposium, we present some latest development of numerical methods, such as parallel domain decomposition methods, and their high-performance implementations for solving Newtonian and non-Newtonian fluid flows problems, linear and nonlinear elasticity problems, electrophysiology problems. Several classes biomechanical problems will be targeted including the cerebral artery, the coronary artery, the pulmonary artery, the abdominal aorta, and the heart.

Below is the list of 10 people who have agreed to speak at the proposed min-symposium:

Robin Shandas (University of Colorado Denver), **Xiaoyu Luo** (University of Glasgow), **Simone Scacchi** (University of Milano), **Li Cai** (Northwestern Polytechnoical University), **Feng-Nan Hwang** (National Central University, Taiwan), **Robert Blake** (Lawrence Livermore National Laboratory), **Christian Vergara** (Polytechnic of Milano), **Luca Pavarino**, (University of Pavia), **Rongliang Chen** (SIAT, Chinese Academy of Sciences), **Xiao-Chuan Cai** (University of Colorado Boulder).