MORE@DIAG

Management, Operations Research and Economics Seminar

Wednesday, April 18, 2018
15:00 am
Room Aula Magna, DIAG, Via Ariosto 25, Roma

15:00 – 16:00 am

Modeling, Simulation, and Uncertainty Quantification in Biomechanics and Cardi

Rolf Krause

Università della Svizzera italiana - Lugano
Head of Group "High Performance Methods for Numerical Simulation in Science, Medicine and Engineering"
Center for Computational Medicine in Cardiology - Director

Abstract

The numerical simulation of physiological and biomechanics processes allows for a better understanding of many internal mechanism of the human body. For example stresses in joints or the activation sequence of the human heart can be computed “in silico”, thus providing the possibility to develop new therapies or to assist physician in diagnosis and therapy. In order to get close to realistic medical applications, or even to a clinical setting, several difficulties have to be addressed. These contain the efficient simulation of coupled and non-linear partial differential equations, the choice of the appropriate models, and, last but not least, the personalization of the simulation by means of, e.g., parameter fitting or uncertainty quantification. In this talk, we give an overview in numerical techniques in biomechanics and cardiology, including contact problems, the electro-mechanical activation of the human heart, and fluid-structure interaction in heart valves.

DIPARTIMENTO DI INGEGNERIA INFORMATICA AUTOMATICA E GESTIONALE ANTONIO RUBERTI

SAPIENZA
UNIVERSITÀ DI ROMA