2nd International Conference on Mathematical and Computational Biomedical Engineering – CMBE2011

March 30 – April 1, 2011, Washington D.C., USA

P. Nithiarasu and R. Löhner (eds)

METHODS OF NUMERICAL CARDIAC ELECTRO-MECHANICS

Lucia Mirabella, Mauro Perego and Alessandro Veneziani

Department of Mathematics and Computer Science, Emory University, Atlanta (GA) USA, {ale,lucia,mauro}@mathcs.emory.edu

PROPOSAL

Key Words: *Cardiac Electrodynamics, Cardiac Mechanics, Heterogeneous models, Numerical Methods, Preconditioning, Adaptivity, Domain Decomposition techniques.*

Effective numerical modeling of the cardiac electro-mechanics still presents open challenging problems. Solving the bidomain system for the propagation of action potential in the cardiac tissue requires a careful numerical set up, due to intrinsic nature of the problem and its size, since very fine grids are required [1, 2]. Several strategies are proposed in the literature in this respect: effective (parallel) preconditioners, adaptive methods (both in time and space), domain decomposition formulations (see e.g. [3, 4, 5,]). Mathematical description of heart mechanics involves suitable modeling of fiber and tissue contraction and relaxation, anisotropy and multiscale effects [6, 7]. Moreover, to couple effectively the electrical and the mechanical dynamics specific techniques need to be investigated [6, 7]. Another relevant topic is the definition of patient specific models retrieved from medical images [8]. In this minisymposium we gather researchers working on different aspects of this field, to discuss recent methods for each component of the problem and promote the collaboration among them to devise effective coupled patient-specific numerical models with an impact on the clinical activity.

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