

Simulation of Human Heart Activation Based on Diffusion Tensor Imaging

Authors : Ihab Elaff

Abstract : Simulating the heart's electrical stimulation is essential in modeling and evaluating the electrophysiology behavior of the heart. For achieving that, there are two structures in concern: the ventricles' Myocardium, and the ventricles' Conduction Network. Ventricles' Myocardium has been modeled as anisotropic material from Diffusion Tensor Imaging (DTI) scan, and the Conduction Network has been extracted from DTI as a case-based structure based on the biological properties of the heart tissues and the working methodology of the Magnetic Resonance Imaging (MRI) scanner. Results of the produced activation were much similar to real measurements of the reference model that was presented in the literature.

Keywords : diffusion tensor, DTI, heart, conduction network, excitation propagation

Conference Title : ICBBBE 2017 : International Conference on Biochemical, Bioprocess and Biomedical Engineering

Conference Location : London, United Kingdom

Conference Dates : August 21-22, 2017