

PROCEEDINGS

Towards High-Fidelity and Efficient Computation for Diagnosis and Treatment of Cardiovascular Disease

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ABSTRACT

Cardiovascular disease is the leading cause of death worldwide. Disease-specific software, like FFRct from HeartFlow, and high-fidelity computational models within a general-purpose software, like Living Heart Project within Abaqus, are essential to revolutionise diagnosis and treatment of cardiovascular disease for clinicians and design of medical devices for industries. This talk presents our past researches on computational modelling of tear propagation in the aortic dissection [1-2] and of electromechanical coupling in the human heart with the finite element method [3], and our current exploration on high-fidelity and efficient computation and software development for diagnosis and treatment of cardiovascular disease with advanced computational methods [4-5] and models.

KEYWORDS

Cardiovascular disease, artery mechanics, heart simulation, material point method

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