

Abstract Submitted  
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**TeraGrid Simulations of Blood Flow in Human Arterial Tree**  
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College, GEORGE KARNIADAKIS, Brown University — We employ a hybrid ap-  
proach to model interactions of blood flow in different regions of human cardio-  
vascular network: using 3D detailed fluid dynamics within sites of interest such as  
artery bifurcations and a reduced set of 1D equations to model waveform coupling  
between sites of interest. Highly scalable algorithms enable us to conduct arterial  
tree simulations with realistic human artery geometries on the TeraGrid, the largest  
computational grid in the US. We conduct coupled cross-site computations over su-  
percomputers distributed across the continent. The algorithms and some results will  
be presented.

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