Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

Flow Dynamics of Contrast Dispersion in the Aorta PARASTOU ESLAMI[1], JUNG-HEE SEO, Johns Hopkins University, MARCUS CHEN, National Institute of Health, RAJAT MITTAL, Johns Hopkins University — The time profile of the contrast concentration or arterial input function (AIF) has many fundamental clinical implications and is of importance for many imaging modalities and diagnosis such as MR perfusion, CT perfusion and CT angiography (CTA). Contrast dispersion in CTA has been utilized to develop a novel method- Transluminal Attenuation Flow Encoding (TAFE)- to estimate coronary blood flow (CBF). However, in clinical practice, AIF is only available in the descending aorta and is used as a surrogate of the AIF at the coronary ostium. In this work we use patient specific computational models of the complete aorta to investigate the fluid dynamics of contrast dispersion in the aorta. The simulation employs a realistic kinematic model of the aortic valve and the dispersion patterns are correlated with the complex dynamics of the pulsatile flow in the curved aorta. The simulations allow us to determine the implications of using the descending aorta AIF as a surrogate for the AIF at the coronary ostium. PE is supported by the NIH Individual Partnership Program. -/abstract- Category: 4.7.1: Biological fluid dynamics: Physiological - Cardiovasc

[1]This work was done at Johns Hopkins University.

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Date submitted: 25 Jul 2016 Electronic form version 1.4