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Suncica Canic* (canic@math.uh.edu). *Interaction between blood flow and multi-layered structure of arterial walls.*

Fluid-structure interaction problems with composite structures arise in many applications. One example is the interaction between blood flow and arterial walls. Arterial walls are composed of several layers, each with different mechanical characteristics and thickness. In this talk we will summarize the main difficulties in studying this class of problems, and present a computational scheme for the calculation of FSI solutions. Our results reveal a new physical regularizing mechanism in FSI problems with multi-layered structures: inertia of the thin fluid-structure interface with mass regularizes evolution of FSI solutions. Implications of our theoretical results on modeling the human cardiovascular system will be discussed. This is a joint work with Boris Muha (University of Zagreb, Croatia), Martina Bukac (U of Notre Dame, US) and Roland Glowinski (UH). Numerical results with vascular stents were obtained with S. Deparis and D. Forti (EPFL, Switzerland). Collaboration with medical doctors Dr. S. Little (Methodist Hospital Houston) and Dr. Z. Krajcer (Texas Heart Institute) is also acknowledged. (Received September 20, 2016)