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Suncica Canic earned her Ph.D. in 1992 in the area of nonlinear hyperbolic conservation laws from the Department of Applied Mathematics and Statistics at SUNY Stony Brook. Upon her move to the University of Houston in 1999, she began collaborating with several medical specialists at the Texas Medical Center in Houston on problems related to cardiovascular treatment and diagnosis. She was honored for her research by the National Science Foundation as Distinguished MPS Lecturer in 2007, and received the US Congressional Recognition for Top Women in Technology in 2006. Her research received local and national media attention, and was featured in several publications by NSF, NIH, and AMS. Canic was also invited to present a Congressional Briefing on Applied Mathematics, on Capitol Hill on December 6th, 2011. She serves on the Board of Governors of the Institute for Mathematics and its Applications in Minneapolis, and was the Program Director of the SIAM Activity Group on Partial Differential Equations. In 2014 she was elected Fellow of the Society for Industrial and Applied Mathematics. She is the only woman who holds a prestigious Cullen Distinguished Professorship position at the University of Houston.

Fluid-Composite Structure Interaction and Blood Flow

Abstract
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. No mathematical results exist so far that analyze existence of solutions to nonlinear, fluid-structure interaction problems in which the structure is composed of several layers. In this talk we summarize the main difficulties in studying this class of problems, and present a computational scheme based on which a proof of the existence of a weak solution was obtained. Our results reveal a new physical regularizing mechanism in FSI problems: inertia of 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), and with Martina Bukac (U of Notre Dame, US). Numerical results with vascular stents were obtained with S. Deparis and D. Forti (EPFL, Switzerland).