Pulse Waves in Elastic Tubes

Radu Cascaval
University of Missouri - Columbia

I will describe a simplified one-dimensional model for the pulse wave propagation through the blood vessels, considered as fluid-filled tubes with elastic walls. Our model takes into account the elasticity of the wall as well as the tapering effect. The influence of fluid viscosity on the wave deformation will be briefly discussed. The spatial dynamics in this model is governed by a variable coefficient dispersive equation with initial conditions given at the inflow. An existence theory for the associated evolution equation, based on an extension of the semilinear Hille-Yosida theory, will be detailed.