CASTS TALKS

Special Program in Applied Mathematics and Applied Mechanics

Monolithic solver for blood flow in large valved veins of inferior limbs

Prof. Marc Thiriet

2018 - 09 - 12 (Wed.)
15:00 - 17:00
103, Mathematics Research Center Building (ori. New Math. Bldg.)

   A monolithic formulation based on full coupling system was conceived, designed, and implemented using a FreeFEM++ fluid-structure solver that was verified and validated. The major application is blood flow through deformable valved veins.   Arteries are distensible, whereas veins are both distensible, enabling blood storage, and collapsible. Walk enhances venous return from extremities of inferior limbs, but also provokes backflow. Venous valves are aimed at limiting backflow magnitude. A hyperelastic incompressible model is used to represent behavior of venous valves and wall.