On the viscoelastic effects in blood flow simulations

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Abstract

The main goal of this presentation is to demonstrate and discuss the differences between the results of numerical simulations of blood flows obtained using generalized Newtonian and generalized Oldroyd-B models. Several idealized blood vessel geometries are assumed to simulate some of the representative blood flow conditions found in living organisms. Numerical solution of the corresponding governing systems of PDE's is carried out using an original numerical code based on finite-volume semi-discretization on structured grids. A simplified explicit Runge-Kutta multistage scheme is applied for time-integration.

Keywords: Non-Newtonian, Oldroyd-B, shear-thinning, finite-volume.

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