

Numerical study of viscous flow of generalized Newtonian fluids

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Abstract

In this paper the numerical results for steady and unsteady fluids flow are presented. The system of Navier-Stokes equations is considered as the governing system of the equations. We tested two models for the stress tensor in the right hand side of this system. First, Stokes model is used. In this model the power-law model as the viscosity function is used. Second, Jeffreys model is considered. For this model the constant viscosity is tested. The numerical results for Newtonian and for Oldroyd-B model are presented. For the unsteady computation we consider the dual-time stepping method. The high artificial compressibility coefficient is used in the artificial compressibility method applied in the dual time τ . The unsteady numerical results of fluids flow in the branching channel are presented.