STABILITY OF FLOWS OF INCOMPRESSIBLE STRESS POWER-LAW FLUIDS

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Abstract

We study the stability of steady plane Poiseuille flow of implicitly constituted incompressible stress power-law fluid. On the channel wall, classical no-slip boundary condition is enforced. The problem is studied within the framework of linearized stability and we derive a generalization of the classical Orr-Sommerfeld equation. Spectral collocation method is employed in numerical investigation of the spectrum of the corresponding differential operator.