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Improved johnson segalman model for couette flow NARIMAN ASHRAFI, None — An improved nonlinear viscoelastic model is proposed and examined for a flow between parallel plates. The model takes into account the interrelations of velocity gradients and stress components through introduction of appropriate coefficients. For a typical viscoelastic material, the coefficients are evaluated and incorporated within the model to simulate the flow of nonlinear Couette flow. In special cases, of the proposed model, typical upper convected Maxwell model and Johnson-Segalman fluid can be recovered from the proposed model further verifying the formulation. The proposed form of constitutive equation almost completely models the physical behavior of a wide range of nonlinear materials, yet it is computationally appropriate as well. The model also allows for the velocity and stress components to be represented by truncated series functions to be used for numerical purposes.

Nariman Ashrafi
None

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