A fully-implicit algorithm for the numerical simulation of log-conformation tensor based viscoelastic flows

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In this work, a fully implicit coupled algorithm for the solution of transient, laminar, incompressible, non-isothermal, viscoelastic flow problems based on the log-conformation tensor approach is presented. The validation of the newly-developed algorithm was performed for the viscoelastic matrix-based Oldroyd-B fluid flow in a two-dimensional axisymmetric 4:1 planar sudden contraction geometry.