1023-65-759 **Vincent J Ervin** (vjervin@clemson.edu), Department of Mathematical Sciences, O-106 Martin Hall, Box 340975, Clemson University, Clemson, SC 29634-0975, **Jason S Howell*** (howell4@clemson.edu), Department of Mathematical Sciences, O-106 Martin Hall, Box 340975, Clemson University, Clemson, SC 29634-0975, and **Hyesuk Lee** (hklee@clemson.edu), Department of Mathematical Sciences, O-106 Martin Hall, Box 340975, Clemson University, Clemson, SC 29634-0975. *Defect-correction methods for finite element computations of viscoelastic fluid flow.*

The numerical simulation of viscoelastic fluid flow becomes more difficult as a physical parameter, the Weissenberg number, increases. Specifically, for a given set of problem parameters, standard nonlinear solution approaches fail to converge beyond a critical value of the Weissenberg number. In this talk we discuss the High Weissenberg Number Problem and present a defect-correction method for computing finite element approximations to steady-state viscoelastic fluids governed by the Johnson-Segalman constitutive law. (Received September 21, 2006)