1005-76-150 **R. J. Braun*** (`braun@math.udel.edu`), Department of Mathematical Sciences, University of Delaware, Newark, DE 19716, and **L. P. Cook** (`cook@math.udel.edu`), Department of Mathematical Sciences, University of Delaware, Newark, DE 19716. *Effects of Non-Newtonian Properties on Tear Film Drainage.*

The human tear film is a shear-thinning, viscoelastic fluid. Results from our recent efforts to include these types of properties in a lubrication model for the tear film drainage after a blink. The models will include a FENE-P fit and a Giesekus fit to the data; the models include elasticity and shear thinning. In the numerical solutions, a numerical quadrature is required at each grid point to compute the flux since it cannot be computed analytically as is typical in lubrication theory. The increased viscosity in very slow moving regions will be seen to promote localization near the lids, a phenomenon sometimes called the black line. If time permits, results for a one-dimensional blink model will be presented as well. (Received February 07, 2005)