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**Alexander Panchenko\*** ([panchenko@math.wsu.edu](mailto:panchenko@math.wsu.edu)), Department of Mathematics, Washington State University, Pullman, WA 99164. *Steady Poiseuille flow of nematic liquid crystals: effective equations and momentum relations for Young measures.*

We consider a system of nonlinear second order ordinary differential equations modeling Poiseuille flow of liquid crystals with variable degree of orientation, at the limit of large Ericksen number. The system is singularly perturbed and degenerate, and as a result the solutions are highly oscillatory. We obtain the relations satisfied by the Young measures generated by sequences of weak solutions, and show that the persistent oscillations are encoded in the Young measure generated by the molecular alignment variable  $\phi$ . The effective equations consist of the isotropic Newtonian flow equation, supplemented by algebraic momentum relations for the Young measure generated by  $\phi$ . The latter relations impose restrictions on admissible microstructures in the effective flow. This a joint work with M. C. Calderer. (Received August 13, 2006)