**Migration in confined polymer solutions induced by flow and external forces** BERK USTA, JASON BUTLER, TONY LADD, University of Florida — We investigate the effects of hydrodynamic flow and external body forces on the dynamics of dilute polymer solutions in microchannels using an algorithm which combines the fluctuating lattice-Boltzmann method with micromechanical models of the polymer molecules. We examine different combinations of concurrent and countercurrent applications of the flow and external forces. We specifically address the importance of hydrodynamic interactions, the extent of hydrodynamic dispersion compared to molecular diffusion, and the lateral migration of polymers across the channel. The lateral migration, which results from both the hydrodynamic flow and external forces, exhibits non-trivial behavior depending upon the specific combination of the flow and body forces. We explain the results by comparing to an analysis of a simple dumbbell model and also discuss the possibility of performing separations of different chain sizes.

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