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Conformation and Trapping of DNA at a Convergent Stagnation Point JENNIFER KREFT, Department of Chemistry, University of Texas, Tyler, YENG-LONG CHEN, Institute of Physics, Academia Sinica, HSUEH-CHIA CHANG, Chemical and Biomedical Engineering, University of Notre Dame — We use a lattice-Boltzmann based Brownian dynamics simulation to investigate the elongation of DNA at a convergent stagnation point trapped by a uniform attractive potential. Surprisingly, we find that the coiled state is favored over the stretched state at high Peclet number, Pe. The final elongation is determined by conformation changes during transport to the stagnation point, rather than hydrodynamic stretching at that point. The trapping rate of the DNA is consistent with the classical mean-field convection-diffusion theory and scales as $Pe^{1/3}$. This scaling is insensitive to the attractive potential used.

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