

# Drift of a polymer in a solvent pulled by a force applied at one polymer end

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Abstract:

We study the effects of hydrodynamic interactions on the velocity and longitudinal elongation of a polymer chain in solvent which is pulled by a constant force applied at one end of the polymer. For weak forces the hydrodynamic interactions are not screened, and the velocity-force relation is in accordance with the Stokes law. For large forces the hydrodynamic interactions are only partially screened, which results in unusual corrections to the velocity and the longitudinal elongation. Explicit predictions for the velocity and polymer elongation are also given in this regime.