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Polymer moving through a small channel: A new Monte Carlo approach to study binding effects and chaperones-assisted MICHEL GAUTHIER, GARY W. SLATER, University of Ottawa — We recently developed a new approach to study the translocation of long flexible chains through a small channel. In this one-dimensional lattice model, the translocating polymer is represented by a biased random-walker whose dynamics is governed by the entropic pulling of the sub-chains outside the channel, the external force that is driving the translocation (electric field, chemical potential, ...), and the various frictional effects (hydrodynamic drag, pore-polymer friction, ...). The first goal of the present study is to show how this Monte Carlo approach can be adapted to investigate the impact of binding interactions between the polymer and the channel walls on the distribution of translocation times. Secondly, we will present the implementation of a chaperones-assisted driving mechanism and look at the effect of the binding and unbinding rates of these chaperones on the translocation time.

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