

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Model for passage time of polymer through a pore (weak external forces limit) STANISLAV KOTSEV, ANATOLY KOLOMEISKY, Rice University — Polymer translocation through a pore is an important problem in biophysics. Recent experiments measure the dynamics of the process with a single-molecule precision. In these experiments a single-stranded RNA or DNA molecule is driven through a narrow pore by an external electric field. In our work we concentrate on theoretical modeling of polymer translocation when external forces are weak. In this regime the entropic forces are dominating. Then for long polymers the passage time scales with the number of monomers as N^α . However, the exact value of α is still a matter of discussion. We are proposing a simple phenomenological model which can be solved exactly. Our results are in a good agreement with off-lattice 3D Monte Carlo simulations.

Stanislav Kotsev
Rice University

Date submitted: 10 Jan 2006

Electronic form version 1.4