Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

How tension propagates for a driven semi-flexible chain while translocating through a nano-pore[1] RAMESH ADHIKARI, ANIKET BHATTACHARYA, University of Central Florida, Orlando, FL 32816 — Driven translocation of a stiff chain through a nano-pore is studied using Langevin dynamics in two dimension (2D). We observe that for a given chain length N the mean first passage time (MFPT) $\langle\tau\rangle$ increases for a stiffer chain and the translocation exponent α ($\langle\tau\rangle \sim N^{\alpha}$) satisfies the inequality $2\nu < \alpha < 1+\nu$, where ν is the equilibrium Flory exponent for a given chain stiffness. We calculate the residence time of the individual monomers and observe that the peak position of the residence time $W(m)$ as a function of the monomer index m shifts at a *lower* m-value with *increasing chain stiffness* κ_b. Finally, we provide qualitative physical explanation for dependence of various quantities on chain stiffness κ_b by using ideas from Sakaue's tension propagation(TP) theory [Phys. Rev. E **76**, 021803 (2007)] and its recent implementation into a Brownian dynamics tension propagation (BDTP) scheme for a finite chain by Ikonen et al. [J. Chem. Phys. **137**, 085101 (2012); Phys. Rev. E **85**, 051803 (2012)]for a semi-flexible chain.

[1]Partially supported by UCF Office of Research and Commercialization & College of Science SEED grant.

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Date submitted: 11 Nov 2012 Electronic form version 1.4