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Iso-Flux Tension Propagation Theory and It's Application to Driven Polymer Translocation

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The translocation dynamics of polymers though nanopores driven by external fields is a far-from-equilibrium process, which is described by the tension propagation (TP) theory of Sakaue [1]. In particular, the Brownian Dynamics TP theory within the iso-flux (IFTP) assumption [2] allows a self-consistent derivation of analytic equations of motion for the dynamics, including an explicit form for the chain length dependence of the average translocation time [3]. In this talk I will discuss the application of IFTP theory to the case of a flickering pore and an oscillating external driving force [4], and translocation dynamics of semi-flexible polymer chains [5].

1. T. Sakaue, Phys. Rev. E 76, 021803 (2007).
2. P. Rowghanian and A. Y. Grosberg, J. Phys. Chem. B 115, 14127 (2011).
3. J. Sarabadani, T. Ikonen and T. Ala-Nissila, J. Chem. Phys. 141, 214907 (2014).
4. J. Sarabadani, T. Ikonen and T. Ala-Nissila, J. Chem. Phys. 143, 074905 (2015).
5. J. Sarabadani et al., submitted (2016).