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Some aspects of polymer translocation dynamics through nanopore: comparison of recent the-ories with simulation results[1]

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Translocation of a flexible poymer chain through a narrow pore has still remained an active field of research. Earlier theoretical studies of Sung and Park,[3] Muthukumar,[4] Chuang, Kantor and Kardar, Kantor and Kardar[5] for a flexible chain have been complemented by more recent theories of Sakaue[6] where tension propagation(TP) along the chain backbone at the *cis* side resulting in a nonuniform stretching of the chain has been proposed to be a key input for theoretical studies. Recently these elements of the TP theory has been incorporated in to a Brownian dynamics (BDTP) scheme and numerical studies of the equations of motion are in excellent agreement with prior simulation studies.[7] A driven translocating chain is essentially *out-of-equilibrium*[8] which results in *cis-trans* asymmetries both in ocnformations and in dynamics. Therefore, results from theoretical studies should capture these features. In this talk first I will first present results from Langevin dynamics simulation citing several cases where how this *cis-trans* asymmetry affects the chain conformations and the translocation dynamics. Then I will dicuss relevance of these results in the context of exisiting theories.

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