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Dynamics of polymer translocation rectified by attractive binding particles ANIKET BHATTACHARYA, CHRISTOPHER LORSCHER, University of Central Florida, TAPIO ALA-NISSILA, Helsinki University of Technology, WOKYUNG SUNG, Pohang University of Science and Technology — We study translocation of flexible homopolymer chains through a nanopore in presence of attractive particles those bind reversibly on the *trans* part of the chain and responsible for successful translocation using Langevin dynamics simulation. We study the mean first passage time (MFPT) as a function of the density ρ_{att} and strength ϵ_{att} of the attractive particles respectively and find that it is qualitatively different compared to the results obtained for straight(rigid) chains[1]. Further, we find the average translocation time $\langle\tau\rangle \sim N^{1.5}$ which is faster than the lower bound predicted by simple one dimensional Langevin equation. Finally, we find that for certain combination of ρ_{att} and ϵ_{att} the translocation is most efficient. We interpret it as a resonant assisted activated translocation. We discuss relevance of our studies in biological translocation processes.

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Aniket Bhattacharya
University of Central Florida

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