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Characterization of the translocation of polymers driven through nanopores using molecular dynamics simulations HENDRICK DE HAAN, GARY W. SLATER, University of Ottawa — The passage of a polymer through a narrow pore (translocation) is a fundamental process with a wide range of biological applications. In particular, threading DNA through nanopores promises to have important implications for the next generation of DNA sequencing techniques. In this work, simulations of the translocation of polymers being driven through a narrow, short nanopore are conducted via the Espresso Molecular Dynamics simulation package using the Lattice-Boltzmann algorithm to include hydrodynamics. In this talk, results from simulations in which an external field is applied within the pore or to one end of the polymer are presented and compared. Characterization of the scaling of the translocation time with the number of monomers as well as details of the anomalous diffusion exhibited by the translocation coordinate will be given.

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