Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Translocation of a Polymer Through a Nanopore in the Presence of Obstacles HENDRICK W. DE HAAN, GARY W. SLATER, University of Ottawa — The translocation of a polymer through a nanopore is interesting both as a process of fundamental biological importance and as relevant to the development of next-generation DNA sequencing technology. Due to the time and length scale of typical systems and events, computer simulations are well suited to study this problem and have been used extensively to study different aspects of the translocation process. In this work, we present results from a system in which a polymer and a membrane containing a nanopore are placed in a medium containing obstacles. Using the Espresso Molecular Dynamics simulation package, simulations are performed in which the translocation events are driven by: i) an obstacle concentration gradient and ii) a varying amount of disorder. Results indicating the establishment of a preferential direction and assessing the impact of the system configuration on details such as the translocation time will be given.

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Date submitted: 01 Dec 2008 Electronic form version 1.4