

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Nanopore DNA translocation studies of tri-oligomer DNA with two hybridization segments**<sup>1</sup> VENKAT BALAGURUSAMY, PAUL WEINGER, XINSHENG LING, Brown University — We have earlier detected 12-base hybridizations in trimer DNA complexes formed by three single-stranded DNA oligomers hybridized at their ends sequentially, using nanopores of  $\sim 10$  nm diameter [1]. These complexes are connected to a polystyrene bead at one end to slow down their translocation. Here, we report translocation experiments at different voltages with nanopores  $\sim 5$  nm diameter. The measured time lapses between the passage of consecutive double-strand DNA segments in a trimer complex allow us to study the translocation dynamics. The measured mean-first-passage time between two consecutive hybridization segments is found to be consistent with theoretical estimates based on the Fokker-Planck equation.

[1] V.S.K.Balagurusamy, P.Weinger and X.S.Ling, *Nanotechnology* 21, 335102 (2010).

<sup>1</sup>This work was supported by a R21 grant from the NIH-NHGRI.

Xinsheng Ling  
Brown University

Date submitted: 23 Dec 2010

Electronic form version 1.4