Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

DNA Partitioning in Confining Nanofluidic Slits MADELINE GREENIER, STEPHEN LEVY, Physics Department, Binghamton University — We measure the partitioning of double stranded DNA molecules in moderately and strongly confining nanofluidic slit-like structures. Using fluorescent microscopy, the free energy penalty of confinement is inferred by comparing the concentration of DNA molecules in adjoining slits of different depths. These depths range in size from several persistence lengths to the DNA molecule's radius of gyration. The partition coefficient is determined as a function of the slit depth, DNA contour length, and DNA topology. We compare our results to theory and Monte Carlo simulations that predict the loss of free energy for ideal and semiflexible excluded volume polymers confined between parallel plates.

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Date submitted: 06 Nov 2015 Electronic form version 1.4