Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Density fluctuations in confined and non-confined DNA JUNHAN PAN, CHUNDA ZHOU, ROBERT RIEHN, North Carolina State University — DNA stretching in quasi one-dimensional nanochannels is an emerging technique for the analysis of genomic-sized DNA molecules. For formulating an optimal measurement strategy, the thermal fluctuations of confined molecules are of crucial importance. While previous measurements have concentrated only on the end-to-end length, we present here an experimental study of density fluctuations within the molecule, and find a good agreement with a model similar to a oscillator chain. We further discuss how such a model leads to a natural interpretation of the interesting intramolecular collapse of DNA that we recently under application of a.c. electric fields at frequencies of a few hundred Hertz.

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Date submitted: 21 Nov 2008 Electronic form version 1.4