

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Effects of sequence on DNA wrapping around histones<sup>1</sup>** VANESSA ORTIZ, Department of Chemical Engineering, Columbia University — A central question in biophysics is whether the sequence of a DNA strand affects its mechanical properties. In epigenetics, these are thought to influence nucleosome positioning and gene expression. Theoretical and experimental attempts to answer this question have been hindered by an inability to directly resolve DNA structure and dynamics at the base-pair level. In our previous studies we used a detailed model of DNA to measure the effects of sequence on the stability of naked DNA under bending. Sequence was shown to influence DNA's ability to form kinks, which arise when certain motifs slide past others to form non-native contacts. Here, we have now included histone-DNA interactions to see if the results obtained for naked DNA are transferable to the problem of nucleosome positioning. Different DNA sequences interacting with the histone protein complex are studied, and their equilibrium and mechanical properties are compared among themselves and with the naked case.

<sup>1</sup>NLM training grant to the Computation and Informatics in Biology and Medicine Training Program (NLM T15LM007359)

Vanessa Ortiz  
Department of Chemical Engineering, Columbia University

Date submitted: 19 Nov 2010

Electronic form version 1.4