

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Binding-rebinding dynamics of proteins interacting non-specifically with a long DNA molecule** AZITA PARSAEIAN, Department of Materials Science and Engineering, Northwestern University, JOHN F. MARKO, D, MONICA OLVERA DE LA CRUZ, Department of Materials Science and Engineering, Northwestern University — Protein interactions with DNA chains and/or fibers regulate a large number of cell functions, and are also important in the understanding of experiments that reveal biochemical and physical cell processes. In order to determine the time range and length range of interactions between proteins and DNA, we analyze the adsorption and de-sorption of units (proteins) that bind reversibly to linear chains (DNA fibers) via non specific interactions through Monte Carlo simulations. We assume the particles are random walkers and that bind reversibly to stretched DNA fiber. In particular we determine the number of re-bindings events. We find that the number of protein re-bindings have a logarithmic dependence on DNA fiber length.

Azita Parsaeian  
Department of Materials Science and Engineering, Northwestern University

Date submitted: 19 Nov 2010

Electronic form version 1.4