Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

**Probing the low-resolution dynamics of biopolymers under force** RUXANDRA DIMA, University of Massachusetts, CHANGBONG HYEON, D. THIRUMALAI, IPST, University of Maryland — Single molecule force experiments are a major source of information for probing the structure and the dynamics of biopolymers. While the response of a biopolymer to the application of force, which is readily obtained from the force versus the extension curve, provides a glimpse of the underlying energy landscape, the much more interesting molecular-level behavior is not as easy to extract. In this context, we introduce a minimal model suitable for simulating the dynamics under force of biomolecules for long time-scales and with modest computational expenses. We will show that forced unfolding pathways predicted using this minimal model on systems that are challenging to simulate with conventional methods correlate very well with the results of recent force-unfolding experiments. Our findings underline the importance of understanding the interplay between tension propagation and the molecular relaxation time in pulling experiments.

Ruxandra Dima
University of Massachusetts

Date submitted: 11 Jan 2006 Electronic form version 1.4