

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**An Experimental Test of Jarzynski's Equality on Free Energy of Protein Unfolding** NOLAN HARRIS, LEIMING LI, CHING-HWA KIANG, Physics & Astronomy, Rice University — We performed an experimental test of Jarzynski's equality on the mechanical unfolding of a giant protein, human cardiac titin. Jarzynski's estimator relates the free energy difference ( $\Delta G$ ) between two equilibrium states and the work performed in switching between those states. We used atomic force microscopy to obtain the single-molecule dynamic force spectroscopy of polyproteins consisting of identical tandem repeats of the I27 domain of titin. We found that Jarzynski's equality results in a good estimate of protein unfolding free energy from non-equilibrium measurements.

Ching-Hwa Kiang  
Physics & Astronomy, Rice University

Date submitted: 07 Dec 2004

Electronic form version 1.4