

Abstract Submitted
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Direct Observation of Multiple Pathways of DNA Stacking Using Single-Molecule AFM CHING-HWA KIANG, WEI-HUNG CHEN, Department of Physics and Astronomy, Rice University, Houston, TX 77005 — During DNA interactions, single-stranded DNA (ssDNA) is often stretched and stabilized by coupling with ssDNA binding proteins to serve as an intermediate state. The conformational and energetic changes of stretched DNA are of great interest because of their relevance in biological functions. Direct manipulation of DNA has yielded much of the information about the mechanical properties of DNA without the complication of interacting molecules. Stretching ssDNA has provided direct measurement of the base stacking mechanics and energetics. For example, polydA has been shown to have two transitions during overstretching. Here we showed direct observation of two overstretching pathways during the second transition. We have observed “hopping” between these two pathways during constant-force measurements. We will discuss the implications of such transition and its significance in biological functions.

Ching-Hwa Kiang
Department of Physics and Astronomy, Rice University, Houston, TX 77005

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