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Sequence and Temperature Dependence of DNA Bending Fluctuations ROBERT A. FORTIES, RALF BUNDSCHUH, MICHAEL G. POIRIER, Department of Physics, The Ohio State University, 191 West Woodruff Avenue, Columbus, Ohio 43210-1117, USA — Recent DNA cyclization experiments measured J factors indicating that DNA may form sharp bends more easily than predicted by the worm-like chain model. One proposed explanation is that local melting of a few base pairs (bp) introduces flexible hinges [Yan, J. et al., *Phys. Rev. E* **71**, 061905 (2005)]. We incorporate sequence dependence of the local melting into this model and obtain specific predictions for the dependence of J factors on temperature and sequence. We then measure J factors for a 200 bp fragment of lambda DNA and two synthetic 116 bp sequences with different proclivities for melting. The measured temperature and sequence dependence of J factors is found to be in agreement with the sequence dependent model predictions using previously measured free energy costs for melting and reasonable estimates for the flexibility of melted segments of DNA.

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