

Abstract Submitted
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Optical measurement of DNA torsional modulus under various stretching forces JAEHYUCK CHOI, Electrician and Computer Engineering, U. of California, San Diego, YU-HWA LO TEAM¹ — Optical measurement of DNA torsional modulus under various stretching forces Jaehyuck Choi[1], Kai Zhao[2] Y.-H. Lo[1] [1] Department of Electrical and Computer Engineering, [2] Department of Physics University of California at San Diego, La Jolla, California 92093-0407 We have measured the torsional spring modulus of a double stranded-DNA by applying an external torque around the axis of a vertically stretched DNA molecule. We observed that the torsional modulus of the DNA increases with stretching force. This result supports the hypothesis that an applied stretching force may raise the intrinsic torsional modulus of ds-DNA via elastic coupling between twisting and stretching. This further verifies that the torsional modulus value ($C = 46.5 \pm 10$ pN nm²) of a ds-DNA investigated under Brownian torque (no external force and torque) could be the pure intrinsic value without contribution from other effects such as stretching, bending, or buckling of DNA chains.

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