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Electrochemical measurement of DNA in a nanofluidic channel
CHIH-KUAN TUNG, Dept of Physics, Princeton University, ROBERT RIEHN, North Carolina State University, ROBERT H. AUSTIN, Dept of Physics, Princeton University — The elongation of genomic length DNA in confining nanochannels is not only a fascinating exercise in polymer dynamics, but also is of great interest in biotechnology because the elongation of the confined molecule is directly proportional to the actual length of the molecule in basepairs. We will present a way to construct nanochannels using sacrificial PMMA ebeam lithography and to measure non-immobilized DNA molecules inside such a channel electrochemically. This kind of measurements can lead us to fast and precise electronic length measurement, which will open the door to a number of important areas in genomics such as gene exchange and evolution dynamics of single cells.

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