Force dependence of the opening rate of a single DNA hairpin-loop

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Dept. of Physics & Astronomy, UCLA — We directly measure the opening rate
of a single DNA hairpin-loop (beacon) for different mechanical forces by optically
monitoring the displacement of a μm sized bead tethered to a surface by a single
DNA beacon (20 base pairs loop). We thus obtain a spectrum of rates, depending on
mechanical forces (the range of 0-10pN), in contrast to FRET measurements which
obtain only the zero force rate. In addition, our method gives access to long time
scales.