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**Detection of ATP hydrolysis through motion of nanoconfined DNA** MAEDEH ROUSHAN, GIDEON LIVSHITS, ZUBAIR AZAD, HONG WANG, ROBERT RIEHN, North Carolina State University — Confinement of DNA to nanochannels with a cross-section of  $100 \times 100 \text{ nm}^2$  and hundreds of micrometer long has previously been used to investigate the equilibrium binding properties of proteins to DNA. Here we report on the observation that a range of proteins which catalyze a modification of DNA, and that do so by hydrolyzing ATP, cause a net directed motion of nanochannel-confined DNA. We present a model for this observation that does not require any motor-like action of the protein and that is purely dependent on the catalytic properties.

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