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Nanopores as a Single-Molecule Probe for Protein-DNA Complexes A.R. HALL, S.W. KOWALCZYK, R.M.M. SMEETS, N.H. DEKKER, C. DEKKER, Kavli Institute of Nanoscience, Delft Institute of Technology — In recent years, solid state nanopores have emerged as a productive novel technique for molecular biophysics. The electrophoretic motion of single molecules through these small-scale structures can offer insights into both conformation and charge structure. Here, we apply the method to the RecA nucleoprotein filament - a conformation where proteins polymerize along the entire length of a double-stranded DNA. This offers a unique geometry and charge structure which we probe through a combination of translocation experiments and optical tweezer measurements. We discuss conductance blockade events that are notably larger (12 nS) than those measured for bare dsDNA (1 nS), and present force spectroscopy data showing a high level of charge screening in solution (>90%).

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