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**Ionic Dependence of the Conformation and Dynamics of DNA Confined in Slit-like Nanofluidic Channels** YONGQIANG REN, WALTER REISNER, DEREK STEIN, Brown University — Due to the growth in nanobiofluidic technology for DNA manipulation and analysis there is growing interest in understanding the physics of DNA in nanoconfined environments. Using fluorescence video microscopy we study the ionic dependence of static and dynamic properties of DNA molecules confined in slit-like nanofluidic channels with varying channel height. We observe an abrupt transition from the de Gennes regime to the Odijk regime for three different ionic strengths for both the radius of gyration and the relaxation time. The cross-over channel height between the regimes increases with decreasing ionic strength. By direct measurement of the distribution function for the radius of gyration we can clearly show that the DNA molecules perform 2-D self-avoiding random walks for both the de Gennes and Odijk regimes. We also investigate the possible effects of electrostatic DNA-channel wall interactions.

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