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**Dynamics of DNA molecules confined to slit-like nanofluidic channels** CHRISTINE MEYER, Kavli Institute of Nanoscience, Delft University of Technology, The Netherlands, DOUWE JAN BONTHUIS, present address: Technical University of Munich, Germany, DEREK STEIN, present address: Brown University, USA, CEES DEKKER, Kavli Institute of Nanoscience, Delft University of Technology, The Netherlands — We experimentally investigate the dynamics of DNA in confined spaces. This is not only important for a better understanding of the behavior of DNA as a biologically relevant molecule but also helps us to test general polymer dynamics models. Fluorescently stained DNA molecules are inserted into slit-like nanofluidic channels. The channel material is fused silica and the channels are fabricated using a bonding process. We take fluorescent images of the DNA in channels of different heights and measure the projected size of the DNA molecules fitted by an ellipse. Furthermore, we measure the relaxation times derived from the autocorrelation function of the size. If the channel height is smaller than twice the radius of gyration of the DNA molecules ($R_g = 700$ nm) both parameters agree with the predictions of de Gennes. For even smaller channels with a height less than twice the persistence length of stained DNA ($L_p = 60$ nm) the dynamics resemble the predictions made by Odijk for this regime.

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