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How to determine local stretching and tension in a flow-stretched DNA molecule JONAS N. PEDERSEN, RODOLPHE MARIE, ANDERS KRISTENSEN, HENRIK FLYVBJERG, Tech Univ of Denmark — We determine the nonuniform stretching of and tension in a Mbp-long fragment of DNA that is flow-stretched in a nanofluidic chip. We use no markers, do not know the contour length of the DNA, and do not have the full DNA molecule inside our field-of-view. Instead we analyze the transverse thermal motion of the DNA. Tension at the center of the DNA adds up to 16 pN, giving almost fully stretched DNA. Fitted parameters agree well with simplified expressions, where the DNA is modeled as a cylinder in a parallel flow.

Jonas N. Pedersen
Tech Univ of Denmark

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