Fig. 8. Threshold characteristics in experiment and theory. (a) Experimental threshold characteristics for the nano-transistor in Fig. 7a. (b) Theoretical threshold characteristics for $l = 10$ and $u = 0.1$ with the blue dashed lines corresponding to thermal activation.

simplicity of our model. First, for an improvement it is necessary to proceed from potentials resulting in a self-consistent calculation. Second, our representation of the transistor by an effectively one-dimensional system probably underestimates the backscattering caused by the relatively abrupt transition between contacts and electron channel. Third, the drain current in a real transistor is reduced by impurity interaction, in particular, by inelastic scattering. As a final remark we note that in transistors with a gate length in the micrometer scale short-channel effects may occur which are structurally similar to the ones discussed in this