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Assisted DNA hairpin retraction from nanopores MENI WANUNU,
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02215 — We present results from recent experimental and theoretical investigations
of DNA hairpin retraction from an α-hemolysin nanopore in the presence of an as-
sisting voltage. By mapping the translocation process to that of biased diffusion
of a Brownian particle we compute the probability of the polymer to stay in the
pore as a function of time. Using this model we back out the diffusion constant
and the drift velocity of the polymer as a function of the assisting voltage. While
the drift-diffusion model gives good agreement with experiments at low voltages it
fails for high assisting voltages. We discuss possible reasons for this along with the
implications of our work.

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