

Ion current fluctuations in artificial ion track pores - power spectrum and generalized entropy

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The ion current through individual etched ion tracks (diameter approximately 50 nm, length approximately 12 μm) in a poly (ethylene terephthalate) membrane is recorded at pH 7 as function of applied voltage (-5V to +5V) across the membrane. With increasing voltage, the ion current changes abruptly from random oscillations to structured fluctuations. The power spectrum and the generalized entropy of the recorded current reminds of the potassium channel of a locust muscle cell.