

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Test of the noise-induced nonequilibrium kinetic focusing of voltage-gated ion channels¹ ARMIN KARGOL, Loyola University New Orleans, KONRAD KABZA, Southeastern Louisiana University, STELLA VON MEER, Loyola University New Orleans — It has been postulated [1] that voltage-gated ion channels can be focused into specific conformational states by application of fluctuating voltages, such as dichotomous noise. We conducted an experimental test on Shaker K⁺ channels. We applied the dichotomous noise, reproducing the conditions in [1] as close as physiologically feasible. We also varied the frequency and the amplitude of the dichotomous noise within a certain range. We observed that in some cases, for intermediate noise frequencies (1-2 kHz) and large amplitudes, the probability for intermediate states in the Markov model of the ion channel gating kinetics can be significantly increased above the maximal value for any static voltages. However, so far the scale of the focusing effect observed experimentally is smaller than the numerical simulations predict.

[1]. M.M.Millonas, D.R.Chialvo, Phys.Rev.Lett. 76, 550 (1996)

¹This work was partially supported by a Louisiana Pfund grant (NSF/LEQSF(2005)-Pfund-21) (AK) and the Cottrell College Science Award (CC6481) from Research Corporation (AK).

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Date submitted: 14 Nov 2007

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