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Research note

Collective firing induced by noise in an excitable media in small-world and random network

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Abstract

Synchrony is significant in brain neural network. In this study we investigate the collective firing in an excitable media and modeling the brain network by an small-world one. The Gaussian white noise is taken to the system of phase oscillators, and then to the frequency distribution. An order parameter in non stationary situation and other usefull statistical parameters such as firing are computed. Three regimes are identified in such a network: no firing regime, where all elements are confined near the fixed point; coherent pulsation, where a macroscopic fraction fire simultaneously; and incoherent pulsation, where units fire in a disordered fashion.

Keywords: synchronization, firing, noise, oscillation

For full article, refer to the Persian section