

Self-organized Criticality and Synchronization in a Pulse-coupled Integrate-and-Fire Neuron Model Based on Small World Networks

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Abstract: A lattice model for a set of pulse-coupled integrate-and-fire neurons with small world structure is introduced. We find that our model displays the power-law behavior accompanied with the large-scale synchronized activities among the units. And the different connectivity topologies lead to different behaviors in models of integrate-and-fire neurons.

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Key words: self-organized criticality, synchronization, small world networks

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