

## Different Avalanche Behaviors in Different Specific Areas of a System Based on Neural Networks

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**Abstract:** Based on the standard self-organizing map (SOM) neural network model and an integrate-and-fire mechanism, we introduce a kind of coupled map lattice system to investigate scale-invariance behavior in the activity of model neural populations. We find power-law distribution behavior of avalanche size in our model. But more importantly, we find there are different avalanche distribution behaviors in different specific areas of our system, which are formed by the topological learning process of the SOM net.

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Key words: self-organized criticality, avalanche, neuron networks

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