

## Self-organized Criticality in an Integrate-and-Fire Neuron Model Based on Modified Aging Networks

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**Abstract:** Based on an integrate-and-fire mechanism, we investigate self-organized criticality of a simple neuron model on a modified BA scale-free network with aging nodes. In our model, we find that the distribution of avalanche size follows power-law behavior. The critical exponent  $\tau$  depends on the aging exponent  $\alpha$ . The structures of the network with aging of nodes change with an increase of  $\alpha$ . The different topological structures lead to different behaviors in models of integrate-and-fire neurons.

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Key words: self-organized criticality, avalanche, aging

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