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Study Under AC Stimulation on Excitement Properties of Weighted Small-World Biological Neural Networks with Side-Restrain Mechanism

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Abstract: In this paper, we propose a new model of weighted small-world biological neural networks based on biophysical Hodgkin-Huxley neurons with side-restrain mechanism. Then we study excitement properties of the model under alternating current (AC) stimulation. The study shows that the excitement properties in the networks are preferably consistent with the behavior properties of a brain nervous system under different AC stimuli, such as refractory period and the brain neural excitement response induced by different intensities of noise and coupling. The results of the study have reference worthiness for the brain nerve electrophysiology and epistemological science.

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