Quantitative Biology > Neurons and Cognition

Phase lagging model of brain response to external stimuli - modeling of single action potential

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In this paper we detail a phase lagging model of brain response to external stimuli. The model is derived using the basic laws of physics like conservation of energy law. This model eliminates the paradox of instantaneous propagation of the action potential in the brain. The solution of this model is then presented. The model is further applied in the case of a single neuron and is verified by simulating a single action potential. The results of this modeling are useful not only for the fundamental understanding of single action potential generation, but also they can be applied in case of neuronal interactions where the results can be verified against the real EEG signal.

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