Abstract

In this paper we study the effect of noise on HH Model. Small-world, regular and random neural networks are the types of HH neuronal networks, which we study in spiking synchronization. External noise and Sub threshold stimulus are subjected to all the neurons. In neuronal membranes we study biophysically realistic HH neurons with intensity of intrinsic noise via voltage gated ion channels. There is an optimal strength of noise that is found in each of all the neuronal networks to induce maximal spiking synchronization. We further study that there is a range of synaptic conductance that is present in each of neuronal networks to induce the effect that an optimal strength maximizes the spiking synchronization of noise. Also, the effect diminishes if the synaptic conductance becomes small or large. The synaptic conductance decreases to maximize the effect as the connections between neurons increases.

References

organization and coordination of central and peripheral clocks. Annual Review of Physiology, 72, 517-549.


transduction across voltage-dependent ion channels, Nature 378(6555), 362-364.


**Index Terms**

Computer Science  
Artificial Intelligence
Keywords

External Current  noise current  Strength  Gaussian white noise  Alzheimer’s disease