

Jointly presents

SEMINAR SERIES ON CHAOS, CONTROL AND COMPLEX NETWORKS

**Synaptic Integration and Modulation of Gamma-frequency Current in
Cortical Neuron Model**

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Venue: Room **CD634**, Hong Kong Polytechnic University
Reception starts at 4:15pm
(Language: **English**)

Abstract

In this talk the input-output relationship in a single pyramidal neuron will be discussed from the point of spatial distribution of synapses and the temporally gamma-frequency modulation respectively. Recently experiments showed that synchronous and spatially clustered synaptic input on a single dendrite could generate a highly nonlinear response at soma. Here we reproduce this phenomenon by using the NEURON simulation and show that on the distal dendrites, a mediate degree of synaptic clustering is required to generate the nonlinear integration. In addition, we study how the gamma-frequency inhibitory stimulus at distal dendrites (top-down input) together with Poisson stimulus at basal dendrites (bottom-up input) affect the somatic firing frequency on this neuron model.

About the Speaker

Xiumin Li graduated with a BSc(EE) degree from Taiyuan University of Technology and a master degree from Tianjin University. She is now working toward her PhD degree with Dr. Michael Small on the computational neuroscience and modeling of neural networks.