Center for Quantum Science and Engineering (CQSE)

Weekly Seminar
Oct. 1, 2010 (Friday)

TIME Oct. 1, 14:30 ~ 15:30
TITLE Structure and stability of plastic neural network
SPEAKER Dr. Chun-Chung Chen 陳俊仲
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Abstract

Neurons are the basis of animal brains. Through connecting synapses they form networks with interesting dynamics in the form of neural spikes. Recently improved understanding of synaptic plasticity revealed the important role played by the timing of these spikes in modifying the network connectivity. Through theoretical and computational modeling of the network dynamics and plasticity, we aim to uncover the implications of spike-timing-dependent plasticity on an isolated neural system. The phase structure of such a system could be determined by a simply mean-field approach. In the transition region between stable phases, network simulations uncovered emergent structures of the network, which are shown to have hot-path-like and hub-like conformations through a pseudophysical visualization approach.