

# Center for Quantum Science and Engineering (CQSE)

Weekly Seminar  
Mar. 25, 2011 (Friday)

TIME Mar. 25, 14:30 ~ 15:30  
TITLE From silicon to neuron: Computational neuroscience and its applications  
SPEAKER Dr. Chung-Chuan Lo 羅中泉博士  
Institute of Systems Neuroscience, NTHU  
PLACE Rm716, CCMS & New Physics Building, NTU

## Abstract

Being the most complex matter in the universe, the human brain is a dynamical system consisting of more than 100 billion interacting neurons which make us perceive, act, learn and remember. The functional components of the brain, from membrane channels to brain regions, cross nine orders of magnitude in size. To help understand how functions of the brain arise from the complex interactions across multi-scales, computational neuroscience has become a versatile tool which allows scientists to simulate the dynamics and to analyze the structures of neural networks.

In this talk, I will start with the history of computational neuroscience and its relation with the development of computer science, followed by a few examples on how computational neuroscience addresses questions in neural network functions such as working memory, decision making, learning etc. Then I will discuss the limitation and problems in the field. Finally, I will talk about the future of computational neuroscience and its applications in medical science, information technology and other fields.

