NYU-ECNU
Institute of Brain and Cognitive Science
at NYU Shanghai

BI-WEEKLY SEMINAR SERIES

TOPIC: **Cortical Spatiotemporal Activity Patterns and Their Computational Roles**

SPEAKER: Dr. Pulin Gong (University of Sydney)

TIME: 12:00pm - 1:00pm, 27 October 2014

VENUE: Room 152, Geography Building, 3663 Zhongshan Road North, Shanghai (中山北路校区，地理楼 152 室)

ABSTRACT OF THE TALK

Empirical evidence has shown that the spatiotemporal activity patterns of cortex are organized into propagating waves with complex dynamics. In this talk, I will first present the new methods we have developed, which are able to effectively detect a range of complex wave patterns including plane and spiral waves and saddle patterns from multi-electrode array data. I will then show that these propagating wave patterns can explain the variability of neural spikes, unifying the view of balanced excitation and inhibition and that of highly synchronized synaptic inputs to gain a comprehensive understanding of cortical dynamics. Finally, I will introduce the concept of distributed dynamic computation implemented by interacting spiking wave patterns and will show that such dynamic computation can account for association of temporally disparate events.

BIOGRAPHY

Dr. Pulin Gong is a senior lecturer at University of Sydney (USyd), where he is the head of the Theoretical and Computational Neuroscience Group. Before joining USyd in 2009, Dr Gong was a staff scientist at RIKEN Brain Science Institute in Japan. Dr Gong's research focuses on understanding complex cortical dynamics and their information processing principles in the brain.