

# PHYSICAL MATHEMATICS SEMINAR

## CAN NEURONAL NETWORKS TRADE SPACE FOR TIME?

**OLIVIA WHITE**

Massachusetts Institute of Technology

### ABSTRACT:

Activity of cortical neurons rises while subjects -- from humans to rats -- perform short-term memory tasks. But the collective dynamical properties of neuronal activity and their relation to memory are unknown. According to one well-studied mechanism, cortical networks operate in stable dynamical states; different stimuli activate different stable patterns. I will discuss a recently proposed alternative mechanism that posits that cortical dynamics is transient and that a network's instantaneous state contains information about its past input history. Can biologically plausible cortical networks contain such memory traces in their transient recurrent dynamics? How can experiment -- either on brain physiology or on behavior -- distinguish between these different mechanisms for memory?

**TUESDAY, SEPTEMBER 18, 2007**

**2:30 PM**

**Building 2, Room 105**

*Refreshments at 3:30 PM in Building 2, Room 349  
(Applied Math Common Room)*



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