ITS@THE GRADUATE CENTER

Initiative for the Theoretical Sciences

Experimental approaches to collective behavior in neural networks

Our thoughts, memories, and plans typically are not the result of activity in single neurons. There has been considerable theoretical discussion about how large numbers of neurons cooperate in the brain, with ideas ranging from simple linear models to much more nonlinear, emergent dynamics. In the last decade or so, there has been a quiet revolution, making it possible to record simultaneously from 100 or more neurons, in some cases essentially all of the neurons plausibly involved in a particular task. As part of a longer program on collective behavior in biological systems, this symposium will explore these dramatic experimental developments, and their implications.

Tuesday, 8 March 2011
Science Center (Room 4102)

9:15 AM coffee and bagels/welcome

9:30 AM **Microelectrode structures for multineuron recording**
Dario Amodei, Princeton University

10:45 AM coffee

11:00 AM **Optical recording of dynamics in a memory network**
Emre Aksay, Cornell University, Weill Medical College

12:30 PM lunch

1:30 PM **Exploring 100+ neurons in a small patch of the retina**
Olivier Marre, Princeton University

3:00 PM **Avalanches and criticality in the dynamics of neural networks in culture**
John Beggs, Indiana University

4:15 PM coffee

4:30 PM **Dynamics and connectivity in a local cortical network**
R. Clay Reid, Harvard Medical School

Events are free and open to the scientific community, but we ask that you register by sending an email to its@gc.cuny.edu. We particularly encourage participation by students and postdoctoral fellows, and some funds are available to help with travel and lodging. The Graduate Center of the City University of New York is located at 365 Fifth Ave., between 34th and 35th Streets, in Manhattan. For more information about ITS programs, see http://web.gc.cuny.edu/its/. Program supported in part by the Burroughs Wellcome Fund.