SACRAMENTO STATE

Department of Physics and Astronomy

Physics & Astronomy Colloquium

Spring 2011

"Exploring Neural Function, Structure, and Development"

Understanding how the brain develops and functions is one of the most important scientific frontiers of our time. The brain function emerges from interactions of billions of neurons that form complex circuits and communicate with each other with the help of electrical signals. In order to determine how these neural circuits process information one needs to detect activity of the complete (at least locally) neuronal population. Using the combined expertise of experimental high energy physicists, engineers, and biologists we developed a unique system for recording and stimulating activity of hundreds of neurons simultaneously. We use the developed technique primarily to investigate development and function of the retina: a few hundred micron thick sheet of neural tissue lining the back of the eye that not only detects the photons but provides a complex parallel "front-end" processing of the visual information. I will describe the developed technology and some examples of its use to better understand retinal function and to design improved treatment of some of the retinal diseases.

Alexander Sher

Department of Physics
University of California, Santa Cruz

Thursday, April 21, 2011

*4:20 -5:45 PM - MND 1015

*** Note - later time than previous semesters**

Open & Free to all Students, Faculty & Public