

Cal Poly Pomona Mathematics Colloquium

A Phenomenological Model for the Responses of Neurons

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Certain neurons exhibit different responses when given a stimulus. Examples in the visual system show that visual neurons can exhibit On, Off, and Mixed responses when given a light stimulus. Using a current balance Hodgkin-Huxley type of equation, a phenomenological model which replicates these behaviors will be presented. This model will include two fast variables and one slow variable when a constant current input is used. It will be shown that under this type of input both the On and Off responses can be reproduced. In order to replicate the Mixed response due to two simultaneous stimuli (Kuffler, 1953), an alteration to the model must be made. The analysis of the model includes multiple scales approximations and for a certain class of inputs, an embedding to higher dimensions.

**This talk takes place Tuesday, February 27, 2007
from 9:10-9:55 in Building 4-1-314.**