

Meeting: 1002, Pittsburgh, Pennsylvania, SS 13A, Special Session on Mathematical Biology

1002-92-163 **Martin Wechselberger*** (wm@mbi.osu.edu), 231 West 18th Ave, Columbus, OH 43215. *Giant Squids and Hidden Canards.*

Recent work by Drover et al on a network of Hodgkin-Huxley neurons coupled by excitatory synapses showed a significant slowing of the firing rate of the synchronized network. The slowing of the firing rate is accompanied by subthreshold oscillations near the action potential threshold. These observations are due to the existence of *canards* of folded node type which prevent the neurons from firing action potentials for a certain amount of time. We give a rigorous geometric explanation of the underlying canard phenomenon and show how it predicts the maximal number of subthreshold oscillations responsible for the observed delay. Furthermore we line out general conditions for neuronal models to possess canards of folded node type. (Received September 13, 2004)