Seminar in Nonlinear Systems

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Entrainment and chaos in the pulse-driven Hodgkin-Huxley neuron model

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4:00 pm
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Abstract: The Hodgkin-Huxley system of differential equations models action potential generation in the squid giant axon. As a dynamical system, it exhibits a rich range of behaviors. In this talk, I will discuss numerical evidence that the Hodgkin-Huxley equations, when driven by a periodic impulse train, can respond in a number of different ways. These include stable entrainment to the input, transient chaos followed by entrainment, and fully chaotic behavior. These results are consistent with the predictions of the rigorous theory, due to Qiudong Wang and Lai-Sang Young, which provides the mathematical foundation (and the original motivation) for this work.

Refreshments provided

For additional information contact Marco Lenci (201-216-5453) or Patrick Miller (201-216-8072).