

Department of Applied and Computational Mathematics and Statistics Colloquium



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Dynamics and Network Motifs in Neuroscience

Beginning with the Hopfield model in the 1980s, attractor neural networks have been a popular framework for modeling neural functions such as memory encoding and retrieval. In this talk, I will present a related attractor neural network model that exhibits a wide variety of nonlinear dynamics, including multistability, limit cycles, and chaotic attractors. We study how the dynamics in these networks relates to the underlying graph of connectivity. Interestingly, we find that some architectures support a variety of dynamic regimes, while others tightly constrain the qualitative dynamics. These findings are based on mathematical analyses, but give some insights about the relationship between network structure and function in the brain.

Monday, October 28, 2019
4:30 PM – 5:30 PM
127 Hayes-Healy Center

Colloquium Tea 4:00 PM to 4:30 PM 101A Crowley Commons Room