Mathematical & Computational Biology Seminar

Organizer: Valerie Hower

Wednesday, 2:00–3:00pm, 939 Evans

Oct. 7 **Kevin Lin**, University of Arizona

Spike-time reliability of layered neural oscillator networks

This talk concerns the reliability of large networks of coupled neural oscillators driven by fluctuating stimuli. Reliability means that upon repeated presentations of a given stimulus, the network gives essentially the same response each time; whether a network is reliable can impact its ability to encode information via the precise timing of spikes. I will explain how questions about reliability can be formulated and studied within the framework of Random Dynamical Systems (RDS) theory. Focusing on certain layered network models, I will explain – via a combination of qualitative theory and numerical simulations – how factors like network architecture affect reliability. I will also discuss the effects of noise, and show that some types of noise affect reliability more seriously than others.

This is joint work with Eric Shea-Brown and Lai-Sang Young. No prior knowledge of RDS theory will be assumed.