

**Natalie Klein**

Mentor: Jon Wilkins, SFI Professor

Natalie's project investigates the behavior of neural networks of oscillators inspired by biological systems. She wants to explore the effect of different network structures on synchronization and behavior. She also wants to observe behavior in response to variations in the backpropagation training algorithm that allow adjustments not only to the phase but also the natural frequency of each oscillator. Finally, she asks whether greater overall robustness can be induced by adding thermal noise during the network's training. She will investigate these questions by building a computer simulation of such a network, observing qualitative behavior, and also statistically analyzing the results to report quantitative