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Study of the Wilson-Cowan equations, a neural network model

Abstract:

The Wilson-Cowan model describes, by means of a system of two ordinary differential equations, the temporal evolution of the mean activity in two neuronal populations of a network, one of them being excitatory and the other, inhibitory.

The equations include constants that depend on intrinsic properties of the network and two parameters that represent the external stimuli received by the network. This work is an analysis of the model and some of its dynamical regimes.

The results show that, for some values of the constant parameters, the system exhibits rich dynamics, with possible state changes between oscillatory and stationary regimes when the external stimuli vary in certain regions of the parameter space. These phenomena may represent basic mechanisms underlying more complex processes such as sleep oscillatory rhythms or the establishment of short-term memories.

Date:	Thursday, November 7, 2013
Place:	Room C1/028
Time:	12:00

