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Title:

Weak and Slow: Spatial Patterns in a Heterogeneous Environment

Abstract:

I look at the interactions between heterogeneities and delayed negative feedback in systems which admit stationary persistent structures. The former can cause pinning and stabilize neutrally stable dynamics while the latter can induce several types of dynamics instabilities and motion. I show that the time-scale of the negative feedback and the amplitude of the heterogeneities interact to produce qualitatively different sequences of bifurcations. The models are motivated by dynamics of neurons in the rodent hippocampus during navigation. This work is joint with Rodica Curtu, Carina Curto, and Vladimir Itskov.