

Bifurcations in Nagumo equations on graphs and Fiedler vectors

Vladimír Švígler (University of West Bohemia, Czech Republic)

The Nagumo equation on a graph has an exponential number of stationary solutions for sufficiently small diffusion rate. On the other hand, sufficiently large diffusion rate leaves the spatially homogeneous stationary solutions only. We present a result on how the graph structure effects the bifurcations on the verge of the formation of the first spatially heterogeneous stationary solutions. Namely, we investigate the influence of the algebraic connectivity and its corresponding eigenvector, the Fiedler vector.

During the talk, we shall also go through the motivation for this type of problems and compare the differential equations on graphs and lattices to their natural counterparts - the partial differential equations - in our specific case.