

Lothar Collatz Seminar

Winter Semester 2020/21

Nov 11 · 4:15 pm · online

Dr. Alexander Lohse (Uni Hamburg)

Designing heteroclinic networks from graphs

Abstract:

Heteroclinic connections are solution trajectories that link invariant sets of a dynamical system. For example, they can form robust networks of connections between equilibria in autonomous ode systems with flow-invariant subspaces. This talk is about joint work with Sofia Castro (University of Porto) and Peter Ashwin (University of Exeter) on the relation between the structure of heteroclinic networks and directed graphs between nodes. We consider realizations of a large class of transitive digraphs as robust heteroclinic networks and show that although these realizations are typically not complete (i.e. not all unstable manifolds of its nodes are part of the network), they can be almost complete (i.e. complete up to a set of measure zero) and equable (i.e. all sets of connections from a node have the same dimension). The design of heteroclinic attractors with a prescribed connection structure is of interest in several applications, e.g. in models for neural diseases of the human brain.

For further information please contact

Dr. Claus Goetz (claus.goetz@uni-hamburg.de), or visit
www.c3s.uni-hamburg.de/news-events/seminar-c3s.html