

Time multiscaled version of the Hopf-Takens bifurcation

Jean-Pierre François

Laboratoire Jacques-Louis Lions, UPMC Univ Paris 06

The notion of dangerous boundaries, first introduced by NN Bautin, is enriched nowadays with new examples taken from fast-slow systems. Such boundaries can be union of transient trajectories which are now better qualitatively understood. These transient trajectories appear generically in families with fast-slow Hopf bifurcations. We are currently analyzing this in a more general context called fast-slow Hopf-Takens bifurcations. Non-linear dynamics is developed in three different directions. Geometric qualitative theory of phase portraits, analysis (normal form, averaging and perturbative approach) and numerical simulations. This talk focusses on the analysis approach although we also mention related contributions to numerical simulations.