

* Electronic Address: martin@mvath.de

¹ Free University of Berlin (currently), Czech Academy of Sciences

Recent results for Turing bifurcation with unilateral obstacles

Martin Váth^{1*}

It is well-known that in a reaction-diffusion system of two chemicals a diffusion-driven instability can arise. In particular, a small perturbation of a stationary equilibrium can lead to solutions tending to a spatially nonhomogenous stationary solution, a so-called Turing pattern. This phenomenon usually requires rather different diffusion speeds of the two chemicals. The speaker has shown that unilateral obstacles modeled by inequalities can lead to instability and even to the bifurcation of spatially nonhomogeneous stationary solutions from the equilibrium under weaker conditions. The talk gives a survey on recent results about similar bifurcation phenomena for the case that less restrictive obstacles than variational inequalities are considered. Some of these results were obtained jointly with Jan Eisner, Milan Kučera, Josef Navrátil, and Lutz Recke.