

We present the tools for the dissipative PDEs allowing to describe the dynamics near the pitchfork bifurcation, including the existence of the heteroclinic connections born after the bifurcations. We also give conditions which allow to perform a rigorous computer-assisted proof that this description holds on an explicit parameter range. We apply our methods to two bifurcations from zero for the Kuramoto–Sivashinsky PDE. The parameter range obtained is big enough to allow us to continue the fixed points and the heteroclinic connections using the rigorous integration.

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