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Bistable transition layers with Hamiltonian Dynamics

Transition layer solutions are well studied within the context of bistable reaction-diffusion equations and systems, such as the Allen-Cahn model. In this talk I will discuss the existence and stability of stationary and traveling layer solutions under Schrödinger dynamics. I will present two different contexts: first, a system of coupled Gross-Pitaevskii equations admitting orbitally stable stationary domain wall solutions. Second, traveling wave solutions for a Hamiltonian system in the plane which in addition solve an isoperimetric problem for a degenerate metric defined by the bistable potential.