

Pattern formation in a pseudo-parabolic equation

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We address pattern formation for the so-called pseudo-parabolic equation $u_t = (\phi(u) + u_t)_{xx}$, where the nonlinearity ϕ is a smooth nonmonotone function. Motivated by the Cahn-Hilliard equation for phase-separation of a binary mixture and by a model for aggregating populations, we consider three types of nonlinearities ϕ . We analyse fronts propagating into unstable states and the resulting patterns by match asymptotics techniques and compare these predictions with numerical results successfully.

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