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*Stability of curved interfaces to the two dimensional perturbed Allen–Cahn equations*

We consider equilibrium solutions to a perturbed Allen–Cahn model in bounded 2-dimensional domains that have the form of a curved interface. Using singular perturbation techniques, we fully characterize the stability of such an equilibrium in terms of a certain geometric eigenvalue problem, and give a simple geometric interpretation of our stability results. Full numerical computations of the associated two-dimensional eigenvalue problem are shown to be in excellent agreement with the analytical predictions.