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*Bifurcation of Singularly Perturbed Transition Layer Problem in Inhomogeneous Medium.*

We present results of a one-dimensional singularly perturbed transition layer problem (such as Allen-Cahn equation) in inhomogeneous media that undergo some bifurcation phenomena. The quantitative connection (similarities and differences) between the diffuse layer and reduced problems are demonstrated. It is the first result that simultaneously takes into account the presence of singular perturbation, spatial inhomogeneity and bifurcation. (Received January 19, 2015)