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Section:

9. Ordinary Differential Equations and Dynamical Systems

1991 MS Classification: 34, 35
Nefedov, Nikolai, Lomonosov Moscow State University, Russia
Asymptotic method of differential inequalities for nonlinear singularly perturbed PDE's with internal layers
New asymptotic method of investigation of singularly perturbed equations which was recently developed by the author is presented. This approach is based on constructing of upper and lower solutions by using formal asymptotics. The method is applied to some singularly perturbed problems which have solutions with internal layers: the parabolic problems with periodic solutions, the elliptic systems with fast and slow equations with internal layers and in the case of exchahge of stability, integro-differential equations. The existence, asymptotic behaviour and stability of the solutions are stated by the developed method.
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