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Abstracts of Short Communications and Posters

Section:

10. Partial Differential Equations

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Stable and unstable manifolds for elliptic equations with parameter

We consider the Cauchy problem for a high-order fully nonlinear elliptic equation with parameter. It is assumed that the nonlinear term depends analytically on the unknown functions and its derivatives. We prove that there are two analytic manifolds $\mathcal{M}^+$ and $\mathcal{M}^-$ embedded into the phase space $\mathbb{E}$ of the equation in question such that the following assertions hold: a) the Cauchy problem with initial data on $\mathcal{M}^+$ and $\mathcal{M}^-$ has a unique solution that is defined in a half-space and belongs to the Sobolev space; b) the manifolds $\mathcal{M}^+$ and $\mathcal{M}^-$ intersect only at zero; c) the phase space $\mathbb{E}$ can be represented as the direct sum of the tangent spaces to $\mathcal{M}^+$ and $\mathcal{M}^-$ at zero.