



Existence of Sign-Changing Solutions for a Perturbed Biharmonic Equation

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Abstract

This paper is concerned with the following nonlinear elliptic problem with critical exponent (P_ε): $\Delta^2 u = (1 + \varepsilon K(x))|u|^{(8/(n-4))}u$ in Ω , $\Delta u = u = 0$ on $\partial\Omega$, where Ω is a bounded smooth domain in $\mathbb{R}^n$, $n \geq 5$, ε is a small positive parameter. We prove the existence of sign-changing solution in higher dimensions: to this aim we develop a general finite-dimensional reduction procedure for perturbed variational functionals.

Keywords: Biharmonic equation, critical Sobolev exponent, finite-dimensional reduction, sign-changing solutions.