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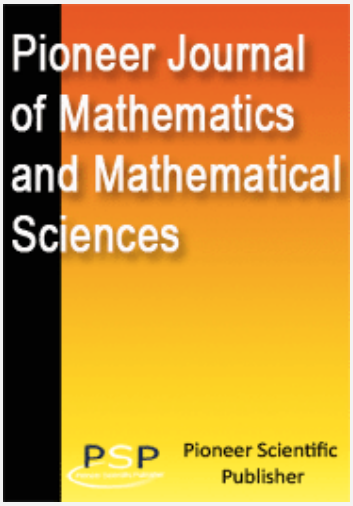

DEGENERATE SEMILINEAR ELLIPTIC PROBLEMS NEAR RESONANCE AT HIGHER EIGENVALUES

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Abstract

In this paper, we consider the degenerate elliptic equation of the form

$$\begin{cases} -div(a(x)\nabla u) = \lambda u + f(x, u) + h(x), & x \in \Omega, \\ u = 0, & x \in \partial\Omega, \end{cases}$$

where $\Omega \subset R^N (N \geq 2)$ is an open bounded domain with smooth boundary $\partial\Omega$, $h \in L^2(\Omega)$, a is a measurable, nonnegative weight function on Ω and $a \in L^1_{loc}(\Omega)$. Using the minimax methods in critical point theory and a generalized Landesman-Lazer type condition, we prove that the problem has at least two solutions for λ near to an eigenvalue of L without the coercive assumption on the nonlinearity f or its primitive function. (where $Lu = -div(a(x)\nabla u)$).

Keywords and phrases: degenerate equations, multiplicity of solutions, Landesman-Lazer type condition, near resonance, saddle point geometry.