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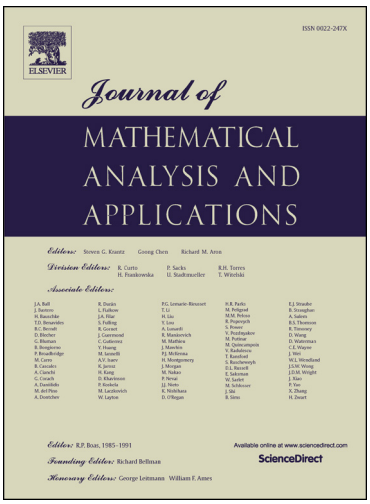

On Kirchhoff type equations with critical Sobolev exponent

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On Kirchhoff type equations with critical Sobolev exponent ⋆

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Abstract

We study the following Brezis-Nirenberg problem of Kirchhoff type

$$\begin{cases} -(a+b\int_\Omega |\nabla u|^2 dx)\Delta u = \lambda |u|^{q-2}u + \delta |u|^2 u, & \text{in } \Omega, \\ u = 0, & \text{on } \partial\Omega, \end{cases}$$

where $\Omega \subset \mathbb{R}^4$ is a bounded domain with the smooth boundary $\partial\Omega$, $2 \le q < 4$ and a, b, λ, δ are positive parameters. We obtain some new existence and nonexistence results, depending on the values of the above parameters, which improve some known results.

Key words: Kirchhoff type equation; nonlocal problem; critical; perturbation method.

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