The existence and nonexistence of global L^2-constrained minimizers for Kirchhoff equations with L^2-subcritical general nonlinearity

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Abstract

In this paper, we study the existence of global L^2-constrained minimizers related to the following Kirchhoff type equation: $$ -\left(a+b\ds\int_{\R^N}|\nabla u|^2\right)\Delta u-f(u)=\lambda u,~~~x\in \R^N,~\lambda\in\R,$$ where $N\leq3$, $a,$ $b>0$ are constants, $f(u)$ is a general L^2-subcritical nonlinearity. By using the concentration compactness principle, we prove the sharp existence and nonexistence of global L^2-constraint minimizers.

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