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Multiple nontrivial solutions for some fourth-order semilinear elliptic problems. (English)

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The goal of the authors is to study the existence of multiple nontrivial solutions to the fourth order semilinear equation:

$$\Delta^2 u + c\Delta u = f(x,u) \text{ in } \Omega \quad u|_{\partial\Omega} = \Delta u|_{\partial\Omega} = 0, \tag{1}$$

where Ω is a bounded open set in $\mathbb{R}^N$ with smooth boundary, Δ^2 denotes the biharmonic operator, $c \in \mathbb{R}$ and f is a given Carathéodory function. To this end they use Morse theory and local linking to find weak solutions.

Reviewer: Messoud A. Efendiev (Berlin)

MSC:

35J40 Boundary value problems for higher-order elliptic equations
35D05 Existence of generalized solutions of PDE (MSC2000)
35J35 Variational methods for higher-order elliptic equations
47J30 Variational methods involving nonlinear operators
58E05 Abstract critical point theory (Morse theory, Lyusternik-Shnirel'man theory, etc.) in infinite-dimensional spaces

Cited in **55** Documents

Keywords:

Critical group; Homological nontrivial critical point; Morse theory; Local linking; Multiple solutions; Traveling waves

Full Text: DOI

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