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A remark on the Ambrosetti-Prodi type problem. (English) Zbl 1445.35178


Summary: In this paper, we consider the Ambrosetti-Prodi type equation, that is, the nonlinearity $f$ is asymptotically linear at $-\infty$, while $f$ is superlinear at $+\infty$. Under weak conditions, we can obtain three nontrivial solutions by Morse theory.

MSC:
35J91 Semilinear elliptic equations with Laplacian, bi-Laplacian or poly-Laplacian
35J61 Semilinear elliptic equations
35J20 Variational methods for second-order elliptic equations
35J25 Boundary value problems for second-order elliptic equations
49J45 Methods involving semicontinuity and convergence; relaxation
58E05 Abstract critical point theory (Morse theory, Lyusternik-Shnirel’mann theory, etc.) in infinite-dimensional spaces

Keywords:
semilinear Dirichlet problem; critical groups; Morse theory

Full Text: DOI

References:

[3] Motreanu, D.; Motreanu, V. V.; Papageorgiou, N. S., Multiple solutions for Dirichlet problems which are superlinear at \(+ \infty\) and (sub)linear at \(- \infty\), Commun. Appl. Anal., 13, 341-358 (2009) · Zbl 1181.35053

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