

A multiplicity result for a class of equations of p-Laplacian type with sign-changing nonlinearities

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Abstract: Using variational arguments we study the non-existence and multiplicity of non-negative solutions for a class equations of the form $-\operatorname{div}(a(x, u)) = f(x, u)$ in Ω , where Ω is a bounded domain in $\mathbb{R}^N$, $N \geq 3$, f is a sign-changing Carathéodory function on $[0, +\infty)$ and λ is a positive parameter. © 2009 Glasgow Mathematical Journal Trust.

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References:

1. Ambrosetti, A., Rabinowitz, P.H., Dual variational methods in critical points theory and applications (1973) J. Funct. Anal., 4, pp. 349-381
2. De apoli, P., Mariani, M.C., Mountain pass solutions to equations of p-Laplacian type (2003) Nonlinear Anal., 54, pp. 1205-1219
3. Duc, D.M., Nonlinear singular elliptic equations (1989) J. Lond. Math. Soc., 40 (2), pp. 420-440
4. Duc, D.M., Vu, N.T., Non-uniformly elliptic equations of p-Laplacian type (2005) Nonlinear Anal., 61, pp. 1483-1495

5. Ekeland, I., On the variational principle (1974) *J. Math. Anal. Appl.*, 47, pp. 324-353
6. Gasinski, L., Papageorgiou, N.S., *Nonsmooth critical point theory and nonlinear boundary value problems* (2005) Series in Mathematical Analysis and Applications, 8. , Chapman & Hall/CRC, Boca Raton, FL
7. Mihailescu, M., Radulescu, V., A multiplicity result for a nonlinear degenerate problem arising in the theory of electrorheological fluids (2006) *Proc. R. Soc. Lond. Ser. A*, 462, pp. 2625-2641
8. Mihailescu, M., Existence and multiplicity of weak solutions for a class of degenerate nonlinear elliptic equations (2006) *Boundary Value Probl.*, p. 17. , Art. ID 41295
9. No, Q.-A., Toan, H.Q., Existence of solutions for a resonant problem under Landesman-Lazer conditions (2008) *Electron. J. Diff. Eqns.* 2008, 98, pp. 1-10
10. Perera, K., Multiple positive solutions for a class of quasilinear elliptic boundary-value problems (2003) *Electron. J. Differential Equations*, 7, pp. 1-5
11. Struwe, M., (2008) *Variational Methods: Applications to Nonlinear Partial Differential Equations and Hamiltonian Systems*, 4 ed. Springer-Verlag, Berlin
12. Toan, H.Q., No, Q.-A., Multiplicity of weak solutions for a class of non-uniformly elliptic equations of p -Laplacian type (2009) *Nonlinear Anal.*, 70, pp. 1536-1546
13. Vu, N.T., Mountain pass theorem and non-uniformly elliptic equations (2005) *Vietnam J. Math.*, 33 (4), pp. 391-408