

论文

带跳跃非线性项的 p -Laplacian问题的结点解

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摘要: 研究了带跳跃非线性项的 p -Laplacian方程结点解的存在性. 如果该问题的非线性项跨越其对应齐次问题的Fučík谱, 我们证明了该问题至少存在一个结点解.

关键词: Fučík谱 结点解 跳跃非线性项

MSC2000 34B08; 34C10; 34C23

Nodal Solutions for p -Laplacian Problems with Jumping Nonlinearities

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Abstract: We study the existence of nodal solutions for the p -Laplacian problems with jumping nonlinearities at zero and infinity. More precisely, we show that there exists at least one nodal solution to the problems if nonlinearities crossing the Fučík spectrum.

Keywords: Fučík spectrum nodal solution jumping nonlinearity

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- [1] Alexander J. C., Antman S. S., Global and local behavior of bifurcating multidimensional continua of solutions for multiparameter nonlinear eigenvalue problems, Arch. Rat. Mech. Anal., 1981, 76: 339-354.
- [2] Ambrosetti A., Prodi G., On the inversion of some differentiable mappings with singularities between Banach spaces, Ann. Mat. Pura Appl., 1972, 93: 231-247.
- [3] Antman S. S., Nonlinear Problems of Elasticity, Applied Math. Sciences, 107, Springer-Verlag, New York, 1995.
- [4] Cantrell R. S., Multiparameter bifurcation problems and topological degree, J. Differential Equations, 1984, 52: 39-51.
- [5] Dai G., Ma R., Unilateral global bifurcation phenomena and nodal solutions for p -Laplacian, J. Differential Equations, 2012, 252: 2448-2468.
- [6] Dambrosio W., Global bifurcation from the Fučík spectrum, Rend. Semin. Mat. Univ. Padova, 2000, 103: 261-281.
- [7] Dancer E. N., On the Dirichlet problem for weakly nonlinear elliptic partial differential equation, Proc. Roy. Soc. Edinburgh, 1977, 76: 283-300.
- [8] Dancer E. N., On the structure of solutions of non-linear eigenvalue problems, Indiana U. Math J., 1974, 23: 1069-1076.
- [9] Drábek P., Solvability and Bifurcations of Nonlinear Equations, in Pitman Research Notes in

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Mathematics, Vol. 264, Longman, Harlow, New York, 1992.

[10] Fitzpatrick P. M., Massabò I., Pejsachowicz J., Global several-parameter bifurcation and continuation theorems: a unified approach via completing maps, *Math. Ann.*, 1983, 263: 61-73.

[11] Fučík S., Boundary value problems with jumping nonlinearities, *Casopis Pest. Mat.*, 1976, 101(1): 69-87.

[12] Hale J. K., Bifurcation from simple eigenvalues for several parameter families, *Nonlinear Anal.*, 1978, 2: 491-497.

[13] Ize J., Connected sets in multiparameter bifurcation, *Nonlinear Anal.*, 1997, 30: 3763-3774.

[14] Krasnosel'ski M. A., *Topological Methods in the Theory of Nonlinear Integral Equations*, Macmillan, New York, 1965.

[15] Lazer A. C., McKenna P. J., Large amplitude periodic oscillations in suspension bridges: some new connections with nonlinear analysis, *SIAM Rev.*, 1990, 32: 537-578.

[16] Lee Y. H., Sim I., Existence results of sign-changing solutions for singular one-dimensional p -Laplacian problems, *Nonlinear Anal.*, 2008, 68: 1195-1209.

[17] Rabinowitz P. H., Some global results for nonlinear eigenvalue problems, *J. Funct. Anal.*, 1971, 7: 487-513.

[18] Welsh S., A vector parameter global bifurcation result, *Nonlinear Anal.*, 1995, 25: 1425-1435.

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