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Equations aux dérivées partielles non-linéaires, théorie spectrale et applications

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Title : Eigenproblem for p-Laplacian and nonlinear elliptic equation with nonlinear boundary conditions

Abstract : In this article we study the solvability of nonlinear problem for p-Laplacian with nonlinear boundary conditions. We give some characterization of the first eigenvalue of an intermediary eigenvalue problem as simplicity, isolation and her strict monotonicity. Afterward we character also the second eigenvalue and her strictly partial monotony. On the other hand, in some sens, we establish the non-resonance below the first and furthermore between the first and second eigenvalues of nonlinear Steklov-Robin.

Keywords: Eigenproblem; p-Laplacian operator; variational method; non-resonance problems.

References

- [1] A. Anane, O. Chakrone; Sur un théorème de point critique et application à un problème de non-résonance entre deux valeurs propres du p-laplacien, Annales de la faculté des sciences de Toulouse , 6ème Série, tome 9, numéro 1 (2000), 5-30.
- [2] J.Berkovits, V. Mustonen; Non linear mapping of monotone type (classification and degree theory), Math univer. Oulu, Linnalmaa, Oulu, Finland (1988).
- [3] G. Li, H. Liu, B. Cheng; Eigenvalue problem for p-Laplacian with mixed boundary conditions, Mathematical Sciences. 109 (2013), 1-8.
- [4] P. Lindqvist; On the equation $\operatorname{div}(|\nabla u|^{p-2}\nabla u) + \lambda|u|^{p-2}u = 0$, Proc. Amer. Math. Soc. 109 (1990), No. 1, 157-164.
- [5] N. Mavinga, Generalized eigenproblem and nonlinear elliptic equations with nonlinear boundary conditions, j. Proceedings of the Royal Society of Edinburgh. 142A (2012), 137-153.