Multiple solutions for a class of quasilinear elliptic equations of p(x)-Laplacian type with nonlinear boundary conditions

Chung N.T., Ng Q.-A.
Department of Mathematics and Informatics, Quang Binh University, 312 Ly Thuong Kiet, Dong Hoi, Quang Binh, Viet Nam; Department of Mathematics, College of Science, Vietnam National University, Hanoi, Viet Nam; Department of Mathematics, National University of Singapore, 2 Science Drive 2, 117543 Singapore, Singapore

Abstract: Using variational methods we study the non-existence and multiplicity of non-negative solutions for a class of quasilinear elliptic equations of p(x)-Laplacian type with nonlinear boundary conditions of the form \(-\text{Div}(|u|^{p(x)-2}u)+|u|^{p(x)-2}u=0\) in \(\Omega\) \(|u|^{p(x)-2}\partial u/\partial n=\lambda g(x,u)\) on \(\partial \Omega\) where \(\Omega\) is a bounded domain with smooth boundary, \(n\) is the outer unit normal to \(\partial \Omega\) and \(\lambda\) is a parameter. Furthermore, we want to emphasize that \(g: \partial \Omega \times [0,\infty) \to \mathbb{R}\) is a continuous function that may or may not satisfy the Ambrosetti-Rabinowitz-type condition. © 2010 Royal Society of Edinburgh.

Year: 2010
Source title: Proceedings of the Royal Society of Edinburgh Section A: Mathematics
Volume: 140
Issue: 2
Page : 259-272
Link: Scopus Link
Correspondence Address: Chung, N. T.; Department of Mathematics and Informatics, Quang Binh University, 312 Ly Thuong Kiet, Dong Hoi, Quang Binh, Viet Nam; email: ntchung82@yahoo.com
ISSN: 3082105
DOI: 10.1017/S030821050800070X
Language of Original Document: English
Abbreviated Source Title: Proceedings of the Royal Society of Edinburgh Section A: Mathematics
Document Type: Article
Source: Scopus
Authors with affiliations:
• Chung, N.T., Department of Mathematics and Informatics, Quang Binh University, 312 Ly Thuong Kiet, Dong Hoi, Quang Binh, Viet Nam
• Ng, Q.-A., Department of Mathematics, College of Science, Vietnam National University, Hanoi, Viet Nam, Department of Mathematics, National University of Singapore, 2 Science Drive 2, 117543 Singapore, Singapore

References:
• Ambrosetti, A., Rabinowitz, P.H., Dual variational methods in critical points theory and applications (1973) J. Funct. Analysis,


