

© 2017 Heldermann Verlag
Journal of Convex Analysis 24 (2017) 261–285

L. Gasiński

Jagiellonian University, Faculty of Mathematics and Computer Science, ul. Łojasiewicza 6,
30-348 Kraków, Poland
Leszek.Gasinski@ii.uj.edu.pl

N. S. Papageorgiou

National Technical University, Department of Mathematics, Zografou Campus, Athens 15780,
Greece
npapg@math.ntua.gr

Positive, Extremal and Nodal Solutions for Nonlinear Parametric Problems

We consider a nonlinear parametric problem driven by the p -Laplace differential operator. For all large enough values of the parameter λ , we show that the problem has a smallest positive solution $u_\lambda^* \in C_0^1(\overline{\Omega})$. We examine the monotonicity and continuity properties of the map $\lambda \mapsto u_\lambda^*$. Finally we establish the existence of nodal (sign changing) solutions.

Keywords: Extremal positive solutions, nonlinear regularity, nonlinear maximum principle, nodal solutions, p -logistic equation.

MSC: 35J20, 35J65, 35P30