Minimax Theory and its Applications 02 (2017) 001–007

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# Elliptic Problems with non Lipschitz Nonlinearities: Some Recent Results and Open Questions

Let $p \in ]1, +\infty[$, let $r, s \in ]0, p[$, with $r < s$, and let $\lambda \in ]0, +\infty[$. In this paper, we present some recent existence and multiplicity results on the solutions of the Dirichlet problem for the elliptic equation

$$-\Delta_p u = (\lambda |u|^{s-2} u - |u|^{r-2} u) \chi_{\{u \neq 0\}}$$

in a bounded domain $\Omega \subset \mathbb{R}^N$, with 0-boundary data. Some related open questions are also proposed.

**Keywords**: Elliptic boundary value problem, nonnegative solution, positive solution, least energy solution, least energy nodal solution, variational methods, indefinite nonlinearities.

**MSC**: 35J20, 35J25