The Dirichlet problem with the competing (p,q)–Laplacian with unbounded weight

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Lest us consider the following boundary value problem

$$\begin{cases} -\operatorname{div}\big(g(u)|\nabla u|^{p-2}\nabla u\big) + \operatorname{div}\big(|\nabla u|^{q-2}\nabla u\big) = f(x,u,\nabla u) & \text{in } \Omega \\ u = 0 & \text{on } \partial\Omega, \end{cases}$$

where $\Omega \subset \mathbb{R}^N$ is bounded domain with Lipschitz boundary $\partial\Omega$, $p > q > 1$, $g\colon \mathbb{R} \to \mathbb{R}$ and $f\colon \Omega \times \mathbb{R} \times \mathbb{R}^N \to \mathbb{R}$. We shall investigate the existence of generalized solutions of the above problem. To obtain this result, we will use some abstract principle, which relies on the Galerkin scheme.

References

[1] J. Diblik, M. Galewski, I. Kossowski, D. Motreanu, *On competing (p,q)-Laplacian Drichlet problem with unbounded weight*, to appear in *Differential and Integral Equations*

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