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ON THE BEHAVIOUR OF THE SOLUTIONS TO p-LAPLACIAN EQUATIONS AS p GOES TO 1

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Abstract

In the present paper we study the behaviour as p goes to 1 of the weak solutions to the problems

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

where Ω is a bounded open set of $\mathbb{R}^N$ ($N \geq 2$) with Lipschitz boundary and $p > 1$. As far as the datum f is concerned, we analyze several cases: the most general one is $f \in W^{-1,\infty}(\Omega)$. We also illustrate our results by means of remarks and examples.

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