Regularity of Weak Solutions to Elliptic Problem with Irregular Data

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Abstract

This paper is concerned with the study of the nonlinear elliptic equations in a bounded subset $\Omega \subset \mathbb{R}^N$ $-\Delta u = f$, where A is an operator of Leray-Lions type acted from the space $W^{1,p(\cdot)}(\Omega)$ into its dual. when the second term f belongs to $L^m(\cdot)$, with $m(\cdot) > 1$ being small. we prove existence and regularity of weak solutions for this class of problems $p(x)$ -growth conditions. The functional framework involves Sobolev spaces with variable exponents as well as Lebesgue spaces with variable exponents.

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