

EXISTENCE AND NONEXISTENCE RESULTS FOR SINGULAR QUASILINEAR ELLIPTIC EQUATIONS

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ABSTRACT. Let Ω be an open and bounded set in \mathbb{R}^N ($N \geq 3$) and $f \in L^{\frac{2N}{N+2}}(\Omega)$ with $f(x) \geq c > 0$, $x \in \Omega_0$, $\forall \Omega_0 \subset \subset \Omega$. We study the existence and nonexistence of solution for problems whose simplest model is

$$-\Delta u + \frac{|\nabla u|^2}{u^\gamma} = f(x), \quad x \in \Omega$$

$$u = 0, \quad \partial\Omega.$$

We state the existence of positive solution for every f if and only if $\gamma < 2$. We consider more general functions in the term of the gradient and the case $f \in L^1(\Omega)$. For the nonexistence we handle more general operators.

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