

POSITIVE SOLUTIONS OF NONLINEAR EQUATIONS WITH NATURAL GROWTH TERMS

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We will present conditions for solvability along with global bounds for positive solutions of quasilinear and fully nonlinear operators perturbed by a ‘natural growth’ term. The model equations for our study are:

$$-\Delta_p u = \sigma |u|^{p-2} u + \omega$$

and

$$F_k(-u) = \sigma u^k + \omega$$

where σ and ω are Borel measures. Here Δ_p is the quasilinear p -Laplacian operator, defined by:

$$\Delta_p u = \operatorname{div}(|\nabla u|^{p-2} \nabla u)$$

and $F_k(u)$ is the fully nonlinear k -Hessian operator, defined by

$$F_k(u) = \sum_{1 \leq i_1 < \dots < i_k \leq n} \lambda_{i_1} \dots \lambda_{i_k}$$

and $\lambda_1, \dots, \lambda_n$ are the eigenvalues of the Hessian matrix of u . The results presented are joint work with Igor E. Verbitsky.