SEMINÁRIO DE ANÁLISE

Necessary and sufficient conditions for existence of Blow-up solutions for elliptic problems in Orlicz-Sobolev spaces

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Abstract. This paper is principally devoted to revisit the remarkable works of Keller and Osserman and generalize some previous results related to the those for the class of quasilinear elliptic problem

$$\begin{cases} \operatorname{div}\left(\phi(|\nabla u|)\nabla u\right) = a(x)f(u) & \text{in } \Omega, \\ u \geq 0 \ \text{ in } \Omega, \ \ u = \infty \text{ on } \partial\Omega, \end{cases}$$

where either $\Omega \subset \mathbf{R}^N$ with $N \geq 1$ is a smooth bounded domain or $\Omega = \mathbf{R}^N$. The function ϕ includes special cases appearing in mathematical models in nonlinear elasticity, plasticity, generalized Newtonian fluids, and in quantum physics. The proofs are based on comparison principle, variational methods and topological arguments on the Orlicz-Sobolev spaces.