SEMINÁRIO DE ANÁLISE

Existence and Uniqueness of Solution for a boundary value problem with local singular oscillation term for the $p(x)-$Laplacian

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Abstract. In this work we consider the existence, uniqueness and regularity of weak solutions to elliptic problem $-\Delta_{p(x)}u = a(x)u^{-\alpha(x)} + \lambda f(x,u)$ where $\alpha(x) > 1 - p_-$. Using the generalized Galerkin method we proved the existence of solutions. The regularity of solution depends on the summability of a on p and α in some Lebesgue spaces. For uniqueness result we prove a Comparison Principle for functions in $W_{loc}^{1,p(x)}(\Omega)$ using some kind of Díaz-Sáa inequality for $p(x)-$Laplacian operator.