

Seminar Title : A study of the weighted (p,q)-Laplacian equation

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Abstract : We prove the existence of solutions for the following boundary value problem $-\operatorname{div}(\rho(x)|\nabla u|^{p(x)-2}\nabla u) - \operatorname{div}(\eta(x)|\nabla u|^{q(x)-2}\nabla u) = \lambda f(x)|u|^{p(x)-2}u$, $\lambda > 0$, $\Omega \subset \mathbb{R}^n = 0$ Ω , where $\Omega \subseteq \mathbb{R}^n$ is a smooth bounded domain, $p(x) \geq 3$, $q(x) > 0$, $1 < p(x) < q(x) < \infty$ and $f(x) \in L^{\infty}(\Omega)$. For suitable values of λ and $\rho(x)$, when $\rho(x) = \rho_1(x) + \rho_2(x)$, we use the variational method to show the existence of a solution and when $\rho(x) = \rho_1(x) - \rho_2(x)$, the existence of at least two solutions have been proved using the method of approximation.