SCOTT RODNEY, Cape Breton University

Existence, Boundedness, and Regularity - an overview of some recent results in Partial Differential Equations

In this talk I will discuss joint work with D. Cruz-Uribe (Alabama), Y. Zeren, S. Cetin, F. Dal (Yildiz Technical Institute). This work surrounds existence and regularity of weak solutions to linear degenerate elliptic PDEs of the form

$$-v^{-1}\mathrm{Div}(Q(x)\nabla u) + K(x, u, \nabla u) = F$$

in a bounded domain Ω where Q is a symmetric non-negative definite measurable matrix of coefficient functions, v is a weight on Ω, K defines 1^{st} and 0^{th}-order terms, and where the data function F may take different forms. I will put this work in contrast with recent results in the area.