
SCOTT RODNEY, Cape Breton University
Global Sobolev Inequalities and Degenerate p -Laplacians

Reporting on joint work with D. Cruz-Urbe and E. Rosta, I discuss a local-global result for matrix weighted Sobolev inequalities using a PDE approach. Given a non-negative definite $n \times n$ matrix function $Q = Q(x)$ in a domain Ω of \mathbb{R}^n , our main result is achieved through a regularity analysis for a one parameter family of matrix weighted p -Laplacians ($p > 1$) of the form

$$X_{p,\tau}u = \operatorname{div}\left(|\sqrt{Q}\nabla u|^{p-2}Q\nabla u\right) - \tau|u|^{p-2}u$$

for $\tau \in (0, 1)$.