On the Generalized Hardy-Rellich Inequalities

Abhishek Sarkar

NTIS – New Technologies for the Information Society
Faculty of Applied Sciences, University of West Bohemia
Univerzitní 8, 306 14 Plzeň, Czech Republic
e-mail: sarkara@ntis.zcu.cz

Abstract

In this talk, we discuss admissible weight functions for generalized Hardy-Rellich type inequalities on open sets. We find various classes of weight functions, depending on the dimension and the geometry of the domain.

Firstly, we use the Muckenhoupt condition for the one dimensional weighted Hardy inequalities and a symmetrization inequality to obtain admissible weights in certain Lorentz-Zygmund spaces. Secondly, using the fundamental theorem of integration we obtain the weight functions in certain weighted Lebesgue spaces. Also as a consequence of our results, we give simple proofs for well-known embeddings for certain second order Sobolev spaces.

The talk will be based on the article "On the Generalized Hardy-Rellich Inequalities"– T.V. Anoop, Ujjal Das & A.S. (arXiv:1801.03197).