

Regularity results for singular elliptic problems

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Abstract. Some local and global regularity results for solutions of linear elliptic equations in weighted spaces are proved. Here the leading coefficients are VMO functions, while the hypotheses on the other coefficients and the boundary conditions involve a suitable weight function.

1. Introduction

Consider the second order linear differential equation

$$(1.1) \quad L_o u = - \sum_{i,j=1}^n a_{ij} u_{x_i x_j} = f \quad \text{a. e. in } \Omega,$$

where L_o is a uniformly elliptic operator in a bounded open subset Ω of \mathbb{R}^n , $n \geq 3$, and $f \in L^p(\Omega)$, $p > 1$. A classical problem in the theory of linear elliptic equations in non-divergence form is the study of local and global regularity properties of solutions of (1.1).