Gradient Estimates for weak solutions of Elliptic PDE's

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Abstract

Let us consider an elliptic equation of second order in variational form i.e.

$$\mathrm{div}(A(x)\nabla u) = \mathrm{div} f$$

in a bounded domain $\Omega \subset \mathbb{R}^n$ where the function f belongs to some suitable function space.

The gradient estimates problem is very important both from theoretical and applied point of view.

In the Seminar we exploit what is the heart of the technique to show gradient estimates allowing the function f to belong to very general function spaces. Our technique is very flexible and allow to show existence, uniqueness and well posedness of the Dirichlet problem in several classes. As an example we will give the result in $W_0^{1,p}$.