Theory of renormalized solutions of elliptic equations with given data in L^1

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Abstract

We will consider theory of renormalized solutions to elliptic problem

$$\begin{cases} -\operatorname{div} a(x, \nabla u) = f \text{ in } \Omega \\ \qquad\qquad u = 0 \text{ on } \partial\Omega \end{cases} \qquad (1)$$

where Ω is open bounded subset in $\mathbb{R}^n$, $f \in L^1(\Omega)$ and a is an elliptic monotone operator. We will show existence and uniquness of renormalized solutions using truncations methods. The lecture will be based on papers L. Boccardo, D. Giachetti, J.I. Diaz, F. Murat *Existence and Regularity of Renormalised Solutions for Some Elliptic Problems Involving Derivatives of Nonlinear Terms*, P. Benilan, L. Boccardo, T. Gallouet, R. Gariepy, M. Pierre, J.L. Vasquez *An L^1-theory of existence and uniqueness of solutions of nonlinear elliptic equations* and lecture given by François Murat.