SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

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Quasilinear elliptic systems with measure data

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Abstract

We study the existence of solutions of quasilinear elliptic systems involving N equations and a measure on the right hand side, with the form

$$\begin{cases} -\sum_{i=1}^{n} \frac{\partial}{\partial x_i} \left(\sum_{\beta=1}^{N} \sum_{j=1}^{n} a_{i,j}^{\alpha,\beta}(x,u) \frac{\partial}{\partial x_j} u^{\beta} \right) = \mu^{\alpha} & \text{in } \Omega, \\ u = 0 & \text{on } \partial\Omega, \end{cases}$$

where $\alpha \in \{1, \dots, N\}$ is the equation index, Ω is an open bounded subset of R^n, $u : \Omega \to \mathbb{R}^N$ and μ is a finite Randon measure on R^n with vaues into R^N. Existence of a solution is proved for different sets of assumptions on A. Examples are provided that satisfy our conditions, but do not satisfy conditions required on previous works on this matter. Some issues related with nonexistence and maximum principle may also be discussed. This is a joint work with F. Leonetti and V. Staicu.

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