

SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

Dia 12 de Outubro (quinta-feira), às 13h30, sala 6.2.33

Lagrange multipliers and transport densities

Lisa Santos
(Universidade do Minho)

Abstract: We consider a stationary variational inequality with nonconstant gradient constraint and we prove the existence of solution of an equivalent Lagrange multiplier problem.

If the gradient constraint g is sufficiently smooth, satisfies $\Delta g^2 \leq 0$ and the source term belongs to $L^\infty(\Omega)$, we are able to prove that the Lagrange multiplier belongs to $L^q(\Omega)$ for $1 < q < \infty$, even in a very degenerate case. Without the restriction on the sign of Δg^2 , the Lagrange multiplier belongs to $L^\infty(\Omega)'$.

We also prove that if we consider the variational inequality with coercivity constant δ and constraint g , then the family of solutions $(\lambda^\delta, u^\delta)_\delta$ of our problem has a subsequence that converges weakly to (λ^0, u^0) , which solves the problem with $\delta = 0$. When $g \equiv 1$, this limit is solution of the mass transport problem.

(Joint work with Assis Azevedo)

Seminário financiado por Fundos Nacionais através da FCT – Fundação para a Ciência e a Tecnologia no âmbito do projeto UID/MAT/04561/2013

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