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SEMINAR

Grupo de Análise Funcional e Aplicações
Functional Analysis and Applications Group

Harmonic analysis and regularity for non-autonomous problems

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Abstract

Vector-valued generalized Orlicz spaces can be divided into anisotropic, quasi-isotropic and isotropic. In isotropic spaces, the Young function depends only on the length of the vector, i.e. $\Phi(v) = \phi(|v|)$. In the quasi-isotropic case $\Phi(v) \approx \phi(|v|)$ so the dependence is via the length of the vector up to a constant. In the anisotropic case, there is no such restriction, and the Young function depends directly on the vector. I will discuss recent advances on the boundedness of the maximal operator in the anisotropic case. Jihoon Ok and I obtained maximal local regularity results of weak solutions or minimizers of

$$\nabla \cdot A(x, Du) = 0 \quad \text{and} \quad \min_u \int_\Omega F(x, Du)\, dx,$$

when A or F are general quasi-isotropic Young functions. Previously known regularity results are included as special cases.

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