15.02.2021

Monday's Nonstandard Seminar 20

14:00

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Title: **Regularity results for degenerate elliptic functionals with non standard growth**

Abstract: I will present some regularity results for vectorial minimizers of integral functionals of the type

$$\int_\Omega f(x, Du(x))\, dx$$

with energy densities $f(x,\xi) = \tilde{f}(x,|\xi|)$ satisfying (p,q)-conditions, i.e. we assume that there exist $2 \le p \le q$ and $C > 0$ such that

$$\frac{1}{C}|\xi|^p \le f(x,\xi) \le C(1+|\xi|^q).$$

The main feature of the energy densities under consideration is that they are degenerate elliptic or with respect to the gradient variable or with respect to the x-variable.
Assuming that the partial map $x \mapsto f(x,\xi)$ belongs to a suitable Sobolev class, we establish the higher differentiability and the higher integrability of the gradient of the minimizers.

References

[1] G. Cupini, F. Giannetti , R. Giova & A. Passarelli di Napoli. *Higher differentiability for minimizers of integrals with non standard growth conditions and discontinuous coefficients.* J. Differential Equations (2018)

[2] A. Clop, F. Hathami, R. Giova & A. Passarelli di Napoli. *Very degenerate elliptic equations under almost critical Sobolev regularity.* Forum Math. (2020)

[3] G. Cupini, P. Marcellini, E. Mascolo , & A. Passarelli di Napoli. *Lipschitz regularity for degenerate elliptic integrals with (p,q)-growth.* Arxiv Preprint (2020)