Barcelona Analysis Seminar **2022–2023**

URL. `https://mat.uab.cat/web/seminarianalisi/`

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Room. T1 (Universitat de Barcelona)

Online streaming (Zoom). Click here to join.

Regularity results for solutions to a class of non-homogeneous elliptic problems

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The aim of this talk is to present some higher differentiability results for local minimizers of functionals of the form

$$\mathcal{F}(w,\Omega) = \int_\Omega [F(x, Dw(x)) - f(x)\cdot w(x)]\, dx,$$

where, for $1 < p < 2$, the energy density F satisfies p-growth and p-ellipticity conditions with respect to the gradient variable and the partial map $x \mapsto D_\xi F(x,\xi)$ belongs to some Sobolev space.
Indeed, a sharp result is proved about the Lebesgue space which the datum f has to belong to, in order to get second order weak differentiability for the solutions, when the coefficients of the Euler-Lagrange Equations are in $W^{1,n}_{\mathrm{loc}}(\Omega)$.
Also the case of a priori bounded minimizers is treated.
The content of this talk is taken from a joint work with A. Clop and A. Passarelli di Napoli (see [1]).

References

[1] A. Clop, A. Gentile, and A. Passarelli di Napoli, *Higher differentiability results for solutions to a class of non-homogeneouns elliptic problems under sub-quadratic growth conditions*, Preprint `https://arxiv.org/abs/2203.12283` (2022).