A SURVEY ABOUT ANISOTROPIC ELLIPTIC-PARABOLIC OPERATORS

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Abstract: In this talk we will speak about the elliptic or parabolic anisotropic equations whose prototypes are

$$\sum_{i=i}^{N} D_i(|D_i u|^{p_i-2} D_i u) = 0$$

$$u_t = \sum_{i=i}^{N} D_i(|D_i u|^{p_i-2} D_i u)$$

with $1 < p_1 \leq p_2 \leq \cdots \leq p_N < \infty$.

Note that when all the p_i are equal we have the p-Laplacean equation
These equation were studied by Giaquinta and Marcellini in

M. Giaquinta, Growth conditions and regularity. A counterexample. Manuscr. Math. 59 (1987), 245-248.

P. Marcellini, Un example de solution discontinue d'un probléme variationnel dans le case scalaire. Ist. Mat. U. Dini. No. 11, Firenze, 1987

where they give an example of unbounded weak solutions.
When the coefficients are not regular, the theory is still fragmented and incomplete.