## Extra fractional differentiability for solutions of non linear elliptic equations

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The talk is based on the joint work with A. Baison, A. Clop, R. Giova, J. Orobitg

We will present some higher fractional differentiability results for solutions of non linear elliptic equations in divergence form

$$\operatorname{div}\mathcal{A}(x, Du) = \operatorname{div}|G|^{p-2}G$$
 in  $\Omega$ ,

where  $\Omega \subset \mathbb{R}^n$  and  $\mathcal{A}(x,\xi)$  is a *p*-harmonic type operator, with  $2 \leq p \leq n$ . More precisely, we will show that some fractional differentiability of the right hand side *G* transfers to the gradient of the solutions assuming that the partial map  $x \to \mathcal{A}(x,\xi)$  belongs to a suitable Besov-Lipschitz space. Moreover, when G = 0, the solutions enjoy analogous extra fractional differentiability under a Triebel-Lizorkin assumption on the partial map  $x \to \mathcal{A}(x,\xi)$ .

## References

- A. Baison, A. Clop, R. Giova, J. Orobitg & A. Passarelli di Napoli. Fractional differentiability for solutions of non linear elliptic equations - Potential Anal. 46,3, 2017, 403-430.
- [2] A. Clop, R. Giova & A. Passarelli di Napoli. Extra fractional differentiability for solutions of the p-harmonic equations Preprint (2017).