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***Title:** Symmetry results for critical  $p$ -Laplace equations.*

***Abstract:*** We present some sharp results of symmetry for nonnegative solutions of nonlinear PDEs of  $p$ -Laplace type. These PDEs are critical in the sense that they are associated with the study of critical points of functional inequalities. In our case, we consider critical equations arising from Sobolev and Caffarelli-Kohn-Nirenberg (CKN) inequalities.

In the first part of the talk, we consider critical  $p$ -Laplace equations arising from Sobolev type inequalities. Nonnegative solutions of these equations are unique up to scaling and translation: this property can also be interpreted as a rigidity result and we provide an approach which allows us to give a complete classification of the solutions in an anisotropic setting as well as to a suitable generalization of the problem in convex cones. This is a joint work with A. Figalli and A. Roncoroni.

The second part of the talk is motivated by the characterization of the optimal symmetry breaking region in CKN inequalities. In this case, symmetry of solutions is not always guaranteed and finding the optimal range of parameters is still an open problem for  $p \neq 2$ . Regarding this problem, we present some recent symmetry results obtained in collaboration with R. Corso.

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