

Optimal Sobolev and Poincaré inequalities with homogeneous weights

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Optimizers of the classical Caffarelli-Kohn-Nirenberg inequality, a Sobolev-type inequality with homogeneous radial weights, turn out to be non radial for a precise range of parameters made precise in a series of works, notably those of Catrina-Wang, Felli-Schneider and Dolbeault-Esteban-Loss. It is also known that for some nonradial homogeneous weights, optimizers are radial, at least for a restricted range of parameters, as follows from works of Cabré-Ros-Oton and N'Guyen. I will explain how these two phenomena are the opposite sides of a same coin and try to give connections with the talk of Giulio Ciraolo.