Symmetry and symmetry breaking of extremal functions in some interpolation inequalities

J. Dolbeault

Université Paris Dauphine

In some classes of weighted interpolation inequalities due to Caffarelli, Kohn and Nirenberg, the set of admissible parameters for which the inequalities are true is splitted by a continuous surface into two regions, one for which the optimal constants are achieved by symmetric functions and another one in which the competition of the nonlinearity and the weight results in a symmetry breaking phenomenon. Most of the known results are based on spectral information combined with variational methods and elliptic techniques for nonlinear analysis.