Sharp Constants and Minimizers for a Class of Inequalities

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Abstract. We consider a class of Caffarelli-Kohn-Nirenberg inequalities without restricting the pertinent parameters and determine the values of the corresponding optimal constants and the functions that achieve them, i.e., minimizers of a suitable functional. By studying a corresponding Euler-Lagrange equation, we also find infinitely many sign-changing solutions at higher energy levels in addition to the ground-state solutions.