

A John-Nirenberg Type Inequality for Q_α Spaces

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Abstract

The John-Nirenberg inequality characterizes functions in the space BMO in terms of the decay of the distribution function of their oscillations over a cube. In my doctoral thesis, I prove a John-Nirenberg type inequality for functions in the space Q_α , introduced by Essen, Janson, Peng and Xiao, who also conjectured a version of this inequality. The inequality I get is a modified version of their conjecture, and I give a counterexample to show the necessity for this modification.

In addition, from this counterexample, we can construct a set of fractal functions which indicate some important properties of the related Q spaces. In fact, those functions themselves are of interest as well.