

Weighted inequalities and extrapolation

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The weighted inequalities for the Hardy-Littlewood maximal operator were characterized by B. Muckenhoupt in 1972. In the following years similar weighted inequalities were shown to hold for many classical operators and the study of the properties of the Muckenhoupt A_p classes became essential. One of their key properties is the extrapolation theorem of J. L. Rubio de Francia (1982). It basically says that the L^p -weighted inequalities for just one value of p give weighted inequalities for (all the) other values of p . Several variants of the extrapolation theorem were subsequently obtained.

In the last decade the study of weighted inequalities has focused attention on the behaviour of the norm of the operator in terms of the A_p constant of the weight. This has led to sharp forms of the extrapolation theorem including the constant of the weights in the assumptions and the conclusions.

After reviewing some of the basic results concerning the A_p classes, we present a simple proof of the sharp form of the extrapolation theorem and give some extensions.

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