NORM INEQUALITIES FOR THE MINIMAL AND MAXIMAL OPERATOR, AND DIFFERENTIATION OF THE INTEGRAL

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Abstract

We study the weighted norm inequalities for the minimal operator, a new operator analogous to the Hardy-Littlewood maximal operator which arose in the study of reverse Hölder inequalities. We characterize the classes of weights which govern the strong and weak-type norm inequalities for the minimal operator in the two weight case, and show that these classes are the same. We also show that a generalization of the minimal operator can be used to obtain information about the differentiability of the integral in cases when the associated maximal operator is large, and we give a new condition for this maximal operator to be weak $(1, 1)$.

Keywords. Minimal operator, maximal operator, weighted norm inequalities, differentiation of the integral.