

HARDY-LITTLEWOOD MAXIMAL OPERATOR IN DOUBLY METRIC MEASURE SPACES.

ABSTRACT. Hardy-Littlewood maximal operator is a combination of a smoothing integral average operation and a non-smoothing supremum operation. What kind of smoothness properties should we expect? In the Euclidean space, the maximal operator is bounded in Lipschitz, Hlder, BMO and (first order) Sobolev classes. In doubling metric measure spaces the situation is more involved. We will discuss some counterexamples as well as some positive results.