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Maria Carmen Reguera* (mreguera@math.gatech.edu). *A counterexample related to Muckenhoupt-Wheeden conjecture.*

The following conjecture about weak L^1 weighted estimates was posed by B. Muckenhoupt and R. Wheeden in the early 70's. If w is a weight, i.e. w is locally integrable and non-negative function, M is the Hardy-Littlewood Maximal operator and T is a Calderón-Zygmund operator then

$$\sup_{t>0} t w \{x \in \mathbb{R} \mid |Tf(x)| > t\} \leq C \int_{\mathbb{R}} |f| Mw(x) dx.$$

With a positive answer to the conjecture when M is replaced by $M_{L(\log L)^\epsilon}$ due to C. Pérez, very little has been known about this difficult problem. In this talk we provide a negative answer to the dyadic version of the above conjecture, i.e. replacing M by the dyadic maximal function we can find a weight w and a Haar multiplier T such that the inequality above is false. (Received August 15, 2010)