Meeting: 1000, Albuquerque, New Mexico, SS 10A, Special Session on Multiscale Methods and Sampling in Time-Frequency Analysis

1000-43-184 **Stephanie Anne Molnar*** (smolnar@math.ucla.edu), 10144 Tabor St. #212, Los Angeles, CA 90034. *Sharp Growth Estimates for Several $T(b)$ Theorems.*

Using Haar wavelets on dyadic intervals and stopping-time arguments, we seek sharp growth estimates for several $T(b)$ theorems. We consider the problem to be two-sided; given a perfect Calderón-Zygmund operator T, and $b \in$ BMO, we can use b as an input and look at $T(b)$ and its norm, or we can use b as an output, create a norm based on the b-adapted Haar wavelets, and use it to measure $T(1)$. We consider first a global b, and then local functions b_I, each supported on a dyadic interval I. In the global cases, we take $\|b\|_{BMO} \leq \gamma^{-1}$ for a fixed $\gamma \in (0,1)$ and that for all I dyadic, $\frac{1}{|I|}\int_I b > C$ for fixed $C > 0$. In the local cases, we look at the L^2-norm of b_I. In both cases, we get that T is bounded on L^2, and that the bound is dependent on a power of γ. For each theorem, we wish to find the power that gives the best possible bound.

This two-sided approach allows us to understand the $T(b)$ theorem in which there are two functions, b_1 and b_2, which act as inputs for T and T^* respectively, as successive smaller theorems. Proofs of these results use the Carleson Embedding theorem and several paraproduct estimates. (Received August 24, 2004)