

1116-44-666

Jarod V Hart* (jvhart@ku.edu) and **Lucas Oliveira**. *A Proof of Weighted Hardy Space Estimates Using Invariance Properties of BMO.*

In this joint work with Lucas Oliveira, we give necessary and sufficient conditions for singular integral operators to be bounded on weighted Hardy spaces. For a Calderón-Zygmund operator T satisfying appropriate cancellation conditions, we prove that T is bounded on H_w^p when $p_0 < p < \infty$ and $w \in A_{p/p_0}$, where $0 < p_0 < 1$ depends on the operator T . Interestingly, these results do not collapse to the known Lebesgue space theory for Calderón-Zygmund operators when $1 < p < \infty$. In fact, it is possible for T to be bounded on H_w^p for $w \in A_q$ when $1 < p < q < \infty$, in which case T may not be bounded on L_w^p . We will also discuss the approach used to prove these estimates, which uses a weight invariant property of BMO spaces. In effect, this proof technique avoids proving many weighted estimates directly for the operator. Instead, we prove estimates for the operator that do not involve weights, and then pass through a weight invariant property that is intrinsic to BMO in order to obtain weighted estimates for the operator. (Received September 10, 2015)