

1038-46-6

**Chaoyuan Mary Liu\*** ([mary.liu@eku.edu](mailto:mary.liu@eku.edu)), Department of Mathematics and Statistics, Eastern Kentucky University, Richmond, KY. *Applications of interpolation theorems*. Preliminary report.

First, we prove the appropriate sublinear operator interpolation theorems between the weak type  $(1, 1)$  estimate and the strong estimate from  $L^\infty$  to  $BMO$ . Then, we prove that square functions, oscillation operators, and variation operators for Lebesgue derivatives map  $L^\infty$  to  $BMO$  and are of strong type  $(p, p)$  which  $1 < p < \infty$  by the previous interpolation theorems. Finally, we prove that these operators are of strong type  $(p, p)$  where  $1 < p < \infty$  for ergodic averages in higher dimensional space by the A. P. Calderón Transfer Principle. (Received February 11, 2008)