1023-37-542 **Chaoyuan Liu*** (mary.liu@eku.edu), Department of Mathematics and Statistics, 312 Wallace Building, Richmond, KY. *Strong Extimate for Lebesgue Derivatives and Ergodic Averages.* Preliminary report.

We study certain operators defined by infinite series that describe the nature of convergence of stochastic processes; these include square functions, oscillation operators, and variation operators. The goal is to prove that these operators map L^∞ to BMO and are of strong type (p,p) where $1 < p < \infty$ for the case that the stochastic processes are Lebesgue differentiation or ergodic averages in higher dimensional space. First, we prove the appropriate sublinear operator interpolation between the weak type $(1,1)$ estimate and the strong estimate from L^∞ to BMO. Then, we prove that these operators map L^∞ to BMO and are of strong type (p,p) which $1 < p < \infty$ for Lebesgue derivatives and for ergodic averages. (Received September 19, 2006)