1081-65-147 **JaEun Ku*** (jku@math.okstate.edu), 401 Mathematical Sciences, Stillwater, OK 74078.

*Goal-oriented local a posteriori error estimators for H(div) least-squares finite element methods.*

In this talk, we present a goal-oriented, local *a posteriori* error estimator for H(div) least-squares (LS) finite element methods. Our main interest is to develop an *a posteriori* error estimator for the flux approximation in a preassigned region of interest $D \subset \Omega$. The estimator is obtained from the LS functional by scaling residuals with proper weight coefficients. The weight coefficients are given in terms of local mesh size $h_T$ and a function $\omega_D$ depending on the distance to $D$. This new error estimator measures the pollution effect from the outside region of $D$ and provides a basis for local refinement in order to efficiently approximate the solution in $D$. Numerical experiments show superior performances of our goal-oriented *a posteriori* estimators over the standard LS functional and global error estimators. This is a joint work with Prof. Cai at Purdue University. (Received February 08, 2012)