1086-62-2078 **Zhiyi Chi** and **Sairam Rayaprolu*** (sairam.rayaprolu@uconn.edu). *Denoising a long locally dependent binary signal sequence: multiple-testing with approximate posterior-likelihood.*

Large scale multiple hypothesis testing plays an important role in biomedical imaging and genomic data processing. Stochastic dependence among the signals is known to adversely affect both the false discovery proportion and the detection power of large-scale multiple tests. Among the causes of the drop in performance are the usage of procedures proven to work only for independent signals and the unknown underlying dependence structure amongst the signals. This talk addresses the issue for the case of a stationary, ergodic signal vector with low signal-strength and known noise distribution. In this setting, a new approach for improved recovery of a long sequence of dependent binary signals embedded in noisy observations is presented. A Bayesian multiple-testing procedure with desirable optimality properties but without the assumption of independence is used. The input to the procedure is a sequence of posterior probabilities obtained using second-order Taylor series approximations and estimated second-order moments of observations. Numerical results are presented for the cases of additive and multiplicative noise. Although we only consider signal vectors registered as a time series, the approach in principle may apply to random fields as well. (Received September 24, 2012)