

## *Empirical Bayes and FDR*

**Cun-Hui Zhang, Rutgers University**

We formulate a Bayes optimization problem as the maximization of the total amount of statistical discovery subject to a preassigned level of certain conditional false discovery rate, and propose an empirical Bayes approach based on the Bayes rule. The Bayes and thus the empirical Bayes approaches are formulated for general dependent data. The asymptotic optimality of the Benjamini-Hochberg rule is proved in the empirical Bayes sense. A Fourier method is proposed for the estimation of the proportion of true null hypotheses. A time series model is studied as an example of dependent data. Some simulation results are presented.