Measurement of Statistical Evidence in Scientific Applications

Measurement of the strength of statistical evidence is, arguably, one of the most important applications of statistical methods in scientific applications. Yet the subject receives relatively little attention. Various definitions of statistical evidence have been proposed, including the likelihood ratio (LR), the Bayes factor and relative belief. Here I will propose something quite different, a novel statistic $E$ involving the relationship between the maximum LR and the integrated LR, and I will show that $E$ has unique, interesting and important properties.