The Methods of Sequential Analysis of Bayesian Type for the Multiple Testing Problem

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Abstract

New sequential methods of multiple testing problem based on special properties of hypotheses acceptance regions in the constrained Bayesian tasks of testing hypotheses, are offered. Investigation results of the properties of one of these methods are given. They show the consistency, simplicity and optimality of the obtained results in the sense of the chosen criterion. The essence of the criterion is to restrict from above the probability of the error of one type and to minimize the probability of the error of the second type. The facts of the validity of the suitable properties of the offered method are proved. The examples of testing of hypotheses for the sequentially obtained independent samples from the multivariate normal distribution with correlated components are cited. They show the high quality of the offered methods. The results of the Wald sequential method are given for the examples with two hypotheses and they are compared with the results obtained by the offered method.