Optimal Designs for Probability Estimation in Binary Response Experiments

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Abstract

In this work, optimal design problems for binary response experiments are discussed. The purpose is estimation of the response probability curve with model uncertainty consideration. A minimax type of model robust design criterion called *MB*-optimum is defined, based on minimizing the maximal response probability bias of two rival models. Next, a maximin type of design criterion called T_{LS}-optimum, based on maximizing the sum of squares of deviations between two rival models as defined in Atkinson and Fedorov (1975) is considered for model discrimination. The corresponding design issues are discussed under the above two types of design criteria with rival models from several commonly seen symmetric location-scale families.

Key words: binary response experiment, *MB*-optimum, T_{LS}-optimum.