Adaptive Designs
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ADAPTATION IN THE DESIGN OF EXPERIMENTS FOR LINEAR MODELS

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Abstract

We demonstrate that even in the classical experimental situation of a linear model the performance of the experiment can be improved by applying the concept of adaptive designs.

1. Introduction. In the classical theory of optimum designs in linear models planning and inference are regarded as two separate successive steps of an experiment. After a design has been fixed all observations will be collected and afterwards the information will be extracted from the outcomes of the experiments [see, for example, the monographs of Bandemer (1977), Fedorov (1972), Pázman (1986), and Silvey (1980)]. If in contrast the experiments are realized successively, the information obtained from the outcomes of the first experiments can be used to design the following ones. Such a scheme will be called an adaptive design.

The aim of this paper is to propose adaptive designs for linear problems in linear models where the corresponding experiments result in more information than could be obtained from the experiments according to any predetermined design.

So far adaptive designs have been considered in the literature for nonlinear situations because there the performance of the estimator and

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