An Overview of Optimal Experimental Designs for Regression

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Abstract

A well-designed experiment may increase the precision of information about the model relating the factors and responses observed in the experiment, and help to identify significant factors in influencing the responses efficiently. In this talk, theory of optimal experimental designs for regression models will be presented. Important principles and methodologies of finding optimal designs for regression models are introduced first. Examples of optimal designs for linear and non-linear regression models with different types of objectives and design regions are discussed later. Moreover, some recent works on optimal design problems for a second-order response surface model on a circle with qualitative factors, and for a linear log contrast model in experiment with mixtures are presented in more detail.