EFFICIENCY BOUNDS FOR PRODUCT DESIGNS IN LINEAR MODELS

Rainer Schwabe[1] and Weng Kee Wong[2]

[1]*Fachbereich Mathematik, Universität Mainz, 55099 Mainz, Germany*
[2]*Department of Biostatistics, University of California, Los Angeles, 10833 Le Conte Ave., Los Angeles, CA 90095, U.S.A.*

(Received February 23, 1998; revised June 26, 1998)

Abstract. We provide lower efficiency bounds for the best product design for an additive multifactor linear model. The A-optimality criterion is used to demonstrate that our bounds are better than the conventional bounds. Applications to other criteria, such as IMSE (integrated mean squared error) criterion are also indicated. In all the cases, the best product design appears to perform better when there are more levels in each factor but decreases when more factors are included. Explicit efficiency formulas for non-additive models are also constructed.

Key words and phrases: A-optimal designs, additive models, continuous designs, interaction, k-way layout, marginal models.