

Some optimal criteria of model-robustness for two-level non-regular fractional factorial designs

Satoshi Aoki

Received: 29 June 2009 / Revised: 24 November 2009 / Published online: 31 March 2010
© The Institute of Statistical Mathematics, Tokyo 2010

Abstract We present some optimal criteria to evaluate model-robustness of non-regular two-level fractional factorial designs. Our method is based on minimizing the sum of squares of all the off-diagonal elements in the information matrix, and considering expectation under appropriate distribution functions for unknown contamination of the interaction effects. By considering uniform distributions on the symmetric support, our criteria can be expressed as linear combinations of $B_s(d)$ characteristic, which is used to characterize the generalized minimum aberration. We give some empirical studies for 12-run non-regular designs to evaluate our method.

Keywords Non-regular designs · Fractional factorial designs · Robustness · Affinely full-dimensional factorial designs · D -optimality