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Optimal blocking schemes for 2^n and 2^{n-p} designs. (English) Zbl 0891.62055

Technometrics 39, No. 3, 298-307 (1997).

Summary: Systematic sources of variations in factorial experiments can be effectively reduced without biasing the estimates of the treatment effects by grouping the runs into blocks. For full factorial designs, optimal blocking schemes are obtained by applying the minimum aberration criterion to the block defining contrast subgroup. A related concept of order of estimability is proposed. For fractional factorial designs, because of the intrinsic difference between treatment factors and block variables, the minimum aberration approach has to be modified. A concept of admissible blocking schemes is proposed for selecting block designs based on multiple criteria. The resulting 2^n and 2^{n-p} designs are shown to have better overall properties for practical experiments than those in the literature.

MSC:

[62K15](#) Factorial statistical designs

[62K05](#) Optimal statistical designs

[62Q05](#) Statistical tables

Cited in **3** Reviews
Cited in **30** Documents

Keywords:

clear main effects; clear two-factor interactions; word-length pattern; optimal blocking schemes; minimum aberration criterion; block defining contrast subgroup; order of estimability; admissible blocking schemes

Full Text: [DOI](#)