

Fundamental Theorems of Quaternary-code Designs

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Abstract

The study of good nonregular fractional factorial designs has received significant attentions over the last two decades. Recent research indicates that designs constructed from quaternary codes (QC) are very promising in this regard. The present talk aims at exploring the fundamental structure and developing the underlying theorems of QC designs. Theorems and their corollaries characterize the wordlengths and aliasing indexes of the words when a general $(1/4)$ th-fraction QC design is given. In addition, for designs of large dimensions, some theorems about the structure periodicities of a general $(1/4)$ th-fraction QC design are stated.

Keywords : Quaternary-code (QC) Designs, Factorial Designs, Resolution, Aberration, Projectivity, Structure Periodicities.