

Latin square designs and fractional factorial designs

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Abstract

A Latin square of order s is an arrangement of the s letters in an $s \times s$ square so that every letter appears exactly once in every row and exactly once in every column. The fractional factorial designs, a subset of the full factorial, are widely used in industrial research or other fields to reduce the cost of the experiment. In fact, Latin squares may also be used for fractional factorial designs, and there are some relationships between these two kinds of design. [5] used two examples to show that a Latin square can be chosen such that it corresponds to a fractional factorial design. In this presentation, we are going to study this topic more precisely. Furthermore, we will explore the relationship between fractional factorial design and Latin square design in general, where s is a prime or a power of a prime.

Keywords

Defining relations, Fractional factorial design, Generator, Orthogonal Latin square, Primitive polynomial.

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