

Constructions of Single and Double Change Covering Designs

A single change covering design is a sequence of b k -sets, called blocks, of a V -set in which exactly one element differs between consecutive blocks and every s -set of V is in some block. We will discuss several recursive constructions which completely solve the existence of SCCD for $k = 3, 4$ and partially for $k = 5$. A double change covering design is similarly defined but consecutive blocks differ by two elements. We give two constructions, one recursive and the other using algebraic difference methods.

Amanda Chafee

Applications of single change covering designs

Combinatorial designs are useful in situations where we must compare, process or analyse every pair of items from some set. Common scenarios include sports tournaments, reliability testing and medical treatment studies. In most applications the test is more expensive than changing components, but when making changes is costly, single change designs minimize these costs. I will discuss two applications of single change covering designs to efficient programming and to reliability testing.

Brett Stevens