Abstract

Designs over finite fields

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A $t-(v,k,\lambda;q)$ design over the finite field $\mathbb{F}_q$ is a set $\mathcal{B}$ of k-dimensional subspaces of the v-dimensional vectorspace $\mathbb{F}_q^v$ such that each t-dimensional subspace of $\mathbb{F}_q^v$ is contained in exactly λ members of $\mathcal{B}$. It is canonic since it arises by replacing sets by vectorspaces over $\mathbb{F}_q$ and their orders by dimensions.

At the beginning of my talk I will outline the results on this topic. Afterwards I will present an algorithm for the systematic construction of these designs over finite fields which is based on group theoretical methods. Finally we will construct some desings over finite fields with the aid of a little software package.