

Quasi-symmetric designs

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A t - (v, k, λ) design is a finite incidence structure consisting of a set \mathcal{V} of v points and a collection \mathcal{B} of k -subsets of \mathcal{V} , called blocks, with the property that any t -subset of \mathcal{V} is contained in exactly λ blocks. A t -design is quasi-symmetric if any two blocks intersect either in x or in y points, for non-negative integers $x < y$. The classification of quasi-symmetric designs for $t = 2$ is a difficult open problem and there are many triples (v, k, λ) for which existence is unknown. Quasi-symmetric designs have important connections with strongly regular graphs and self-orthogonal codes.

We use computational methods for the construction of designs with prescribed automorphism groups, such as the Kramer-Mesner method and a method based on clique search.

This research is part of my PhD thesis.

References

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