On Defining Sets of Full Designs with Block Size Three

Mary Waterhouse
University of Queensland
maw@maths.uq.edu.au

(joint work with Diane Donovan, James Lefevre and Sule Yazici)

A defining set of a t-(v, k, λ) design is a subcollection of its blocks which is contained in a unique t-design with the given parameters. A minimal defining set is a defining set, none of whose proper subcollections is a defining set. The spectrum of minimal defining sets of a design D is the set $\{|M| \mid M$ is a minimal defining set of $D\}$.

The unique simple design with parameters $\left(v, k, \binom{v-2}{k-2}\right)$ is said to be the full design on v elements; it comprises all possible k-tuples on a v set. In this talk we discuss minimal defining sets of full designs when $t = 2$ and $k = 3$. For given v, we will discuss bounds on the size of such defining sets, and we will outline the constructions we have used to prove the existence of a continuous section of the spectrum comprising approximately v values.

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