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Block designs of dimension three

The dimension of a block design is the maximum positive integer d such that any d points are contained in a proper subdesign.

This talk will discuss the currently known existence results of pairwise balanced designs PBD(v, K) of dimension three, for the sets of block sizes $K = \{3, 4\}$, and $K = \{3, 5\}$. Also to be discussed is dimension three triple systems of arbitrary index, whose existence is a consequence of the existence of the aforementioned pairwise balanced designs.

This is based on work with Peter Dukes, extending previous work by Dukes and Joanna Niezen.