Generalised covering designs and clique coverings

Robert Bailey

Covering designs are a generalisation of t-designs, where the requirement that any t-subset of points be contained in *exactly* λ blocks is replaced with the weaker requirement that they be contained in *at least* λ blocks. Covering arrays generalise orthogonal arrays in a similar manner.

In this talk, inspired by PJC's "generalised t-designs", I will present a common generalisation of covering designs and covering arrays, as well as some methods of constructing these new designs. In particular, I'll focus on the case $t = 2$, where there is a strong relationship with graph theory, in the form of clique coverings.

If time permits, I may also talk about the "dual" problem of generalised packing designs.