Group divisible packing designs with block size 3: relationship to coverings

Nevena Francetić
Carleton University

Abstract

Group divisible packing designs (GDPDs) are a generalization of group divisible designs (GDDs) in which a pair of elements from two distinct groups is contained it at most one block. As such, GDPDs are related to packing arrays with row limit.

In this talk we discuss two counting upper bounds on the size of a GDPD. Then we construct optimal group divisible covering designs (GDCDs) with block size three which "transform" into optimal GDPDs. The "transformation" consists of performing the minimal adjustment to the set of blocks: removing only the blocks which contribute to the excess in a GDCD to get a packing design and, if necessary, addition of a number of new blocks to obtain a maximal GDPD.