Università di Brescia

Seminario Matematico di Brescia
Centro di Ricerca Interuniversitario

UNIVERSITÀ CATTOLICA del Sacro Cuore

Seminario Matematico di Brescia

Yanxun Chang

Beijing Jiaotong University, Beijing, China

Cyclic difference packings and applications

Giovedì 02 Luglio 2026
14.30

Aula Seminari
DICATAM — Sezione di Matematica
Università degli Studi di Brescia
Via Valotti 9, Brescia

For information and contacts:
tommaso.traetta@unibs.it

Cyclic difference packings and applications

Yanxun Chang

Beijing Jiaotong University, Beijing, P. R. China

Abstract

Let $(G,+)$ be a group of order v, k and λ be positive integers such that $2 \leqslant k \leqslant v$. A (v,k,λ)-difference packing (briefly DP) over G is a collection $\mathcal{B}$ of k-subsets of G (called *base blocks*) such that the multiset

$$\Delta\mathcal{B} := \cup_{B\in\mathcal{B}}\Delta B = \cup_{B\in\mathcal{B}}\{y-y' : y,y' \in B, y \neq y'\}$$

covers every non-zero element of G at most λ times. The set $\lambda G \setminus \Delta\mathcal{B}$ is called the *difference leave* of this DP. In this talk, the existence results on $(v,k,1)$-DP over G are summarized. As applications, the existence result of cyclic balanced incomplete block designs (cyclic BIBDs) with block size 4 and any index greater than 1 is presented. We also give applications of our result to 1-rotational BIBDs with block size 4 and any index greater than 1.