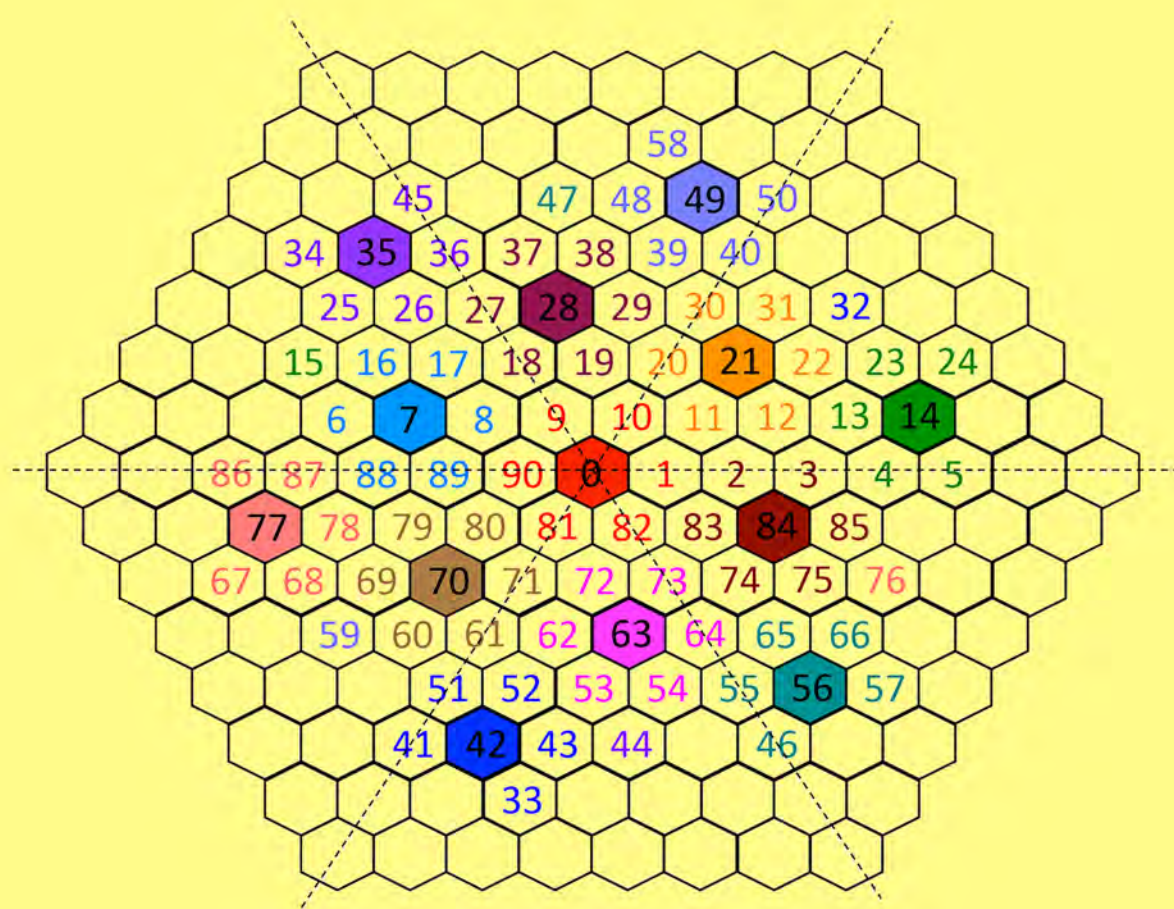


# Colloquium on Combinatorial Designs

**2022.7.17 8:30-11:30**

**Link:** <https://unimelb.zoom.us/j/990698957?pwd=Njk4YlpNNnZ2dnJCYmpOc0ZaaE5hdz09>

**Password:** 523461



## Invited Speakers

- Zaiping Lu**    二弧传递图的构造与刻画
- Binzhou Xia**    Subgroup perfect codes in Cayley graphs
- Sanming Zhou**    Perfect codes in graphs: an introduction

**Organisers:** Tao Feng, Xiande Zhang, Yue Zhou

# 二弧传递图的构造与刻画

路在平（南开大学）

时间：8:30-9:30, 7-17 星期日

Zoom: <https://unimelb.zoom.us/j/990698957?pwd=Njk4YlpNNnZ2dnJCYmpOc0ZaaE5hdz09>

密码：523461

**摘要：**至少有三个顶点的连通图称为基本二弧传递图如果其全自同构群含有一个子  $G$  满足： $G$  在图的二弧集合上作用传递， $G$  的每个极小正规子群在图的顶点集合上至多有两个轨道。Praeger 在 1993 年证明了每个连通的二弧传递图必是某个基本二弧传递图的正规覆盖，刻画了基本二弧传递图的群论结构，并提出了“分类基本二弧传递图”的问题。在这里我们介绍关于 Praeger 问题的一些研究进展。

## Perfect codes in graphs: an introduction

周三明（墨尔本大学）

时间：9:30-10:30, 7-17 星期日

Zoom 链接：同上

**摘要：** Let  $G = (V, E)$  be a graph and  $t$  a positive integer. A perfect  $t$ -code in  $G$  is a subset  $C$  of  $V$  such that every vertex of  $G$  is at distance no more than  $t$  to exactly one vertex in  $C$ . Perfect  $t$ -codes in the Hamming graph  $H(n, q)$  are precisely  $q$ -ary perfect  $t$ -codes of length  $n$  in the classical setting, and those in the Cartesian product of a cycle of length  $q$  with itself  $n$  times are exactly  $q$ -ary perfect  $t$ -codes of length  $n$  under the Lee metric. In this talk I will introduce basic concepts and background information on perfect codes in graphs with a focus distance-transitive graphs and Cayley graphs.

## Subgroup perfect codes in Cayley graphs

夏彬筠（墨尔本大学）

时间：10:30-11:30, 7-17 星期日

Zoom 链接：同上

**摘要：** A subset  $C$  of the vertex set of a graph  $G$  is called a perfect code in  $G$  if every vertex of  $G$  is at distance no more than 1 to exactly one vertex of  $C$ . As a broader framework than some classical setting such as Hamming codes, perfect codes in Cayley graphs have received increasing attention. In this talk I will discuss sufficient and necessary conditions for a subgroup of a finite group to be a perfect code of some Cayley graph of the group.