



北京理工大学

2026 TALKS IN COMBINATORICS



冯弢，北京交通大学教授，博士生导师，主要研究方向为组合设计与编码理论，解决并推广了 Novák 在 1975 年提出的关于循环斯坦纳三元系的猜想；确定了区组大小为 4 的循环 2-设计的存在谱，解决了 Rosa 提出的 3 个公开问题，以及 Colbourn 提出的 1 个公开问题；解决了重量为 4 的最优光正交码的存在性，这是超过 40 年的组合编码领域长期存在的一个公开问题；部分回答了 Etzion 和 Silberstein 关于 Ferrers 图秩度量码的猜想。近主要研究方向为组合数学与编码理论。主持国家自然科学基金项目多项，在 *JCTA*, *IEEE TIT*, *Sci. China Math.*, *Eur. J. Comb.*, *Des. Codes Crypt.*, *Finite Fields App.*, *J. Algebr. Comb.* 等期刊发表论文多篇。

Complete mappings, orthogonal orthomorphisms of groups and difference matrices

A complete mapping of a finite group G is a permutation $\phi : G \rightarrow G$ such that $x \mapsto x\phi(x)$ is also a permutation. A permutation $\theta : G \rightarrow G$ is an orthomorphism of G if the mapping $x \mapsto x^{-1}\theta(x)$ is also a permutation. Two orthomorphisms θ and ϕ of G are orthogonal if the mapping $x \mapsto \theta(x)^{-1}\phi(x)$ is bijective. This talk provides a brief introduction to the existence of complete mappings and orthogonal orthomorphisms of groups, focusing on their algebraic and extremal aspects. Difference matrices have a close relationship with orthogonal orthomorphisms of groups. This talk will also give a survey on difference matrices and their related topics, such as orthogonal arrays and mutually orthogonal Latin squares.

2026.10.26 (Mon) 2.45–3.45 pm @Wencui E609

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