北京理工大學

2025 TALKS IN COMBINATORICS

Sergey Kitaev，英国思克莱德大学理学院教授, 现任 JCTA、Proceedings of the Edinburgh Mathematical Society、Enumerative Combinatorics and Applications 期刊编委。2003 年博士毕业于瑞典哥德堡大学。主要研究组合计数问题，著有专著《Patterns in Permutations and Words》和《Words and Graphs》, 已在 JCTA、AAM、European J. Combin. 等期刊发表文章超过 175 篇。先后主持冰岛和英国国家基金委项目。

Naturally labelled posets and a hierarchy related to interval orders

A partially ordered set (poset)$(P, <_P)$ is naturally labelled by numbers in $\{1, 2, ..., n\}$ if $x <_P y$ implies $x < y$. Naturally labelled posets are in one-to-one correspondence with certain lower triangular binary matrices called poset matrices.

By restricting naturally labelled posets - such as considering $(2+2)$-free, k-free, $(3+1)$-free, N-free, and similar classes of posets - we obtain combinatorial objects that fit nicely into a hierarchy related to interval orders. This hierarchy includes, for example, Fishburn matrices, factorial posets, ascent sequences, pattern-avoiding permutations, and many other structures. In particular, it turns out that $(2+2, 3)$-free naturally labelled posets are in one-to-one correspondence with permutations avoiding the vincular pattern 12-34.

In my presentation, I will introduce these objects and discuss the hierarchy, along with open (embedding) problems.

This is joint work with David Bevan and Gi-Sang Cheon.

2025.6.12 (Thu) 9.00–10.00 am @Wencui E 409.

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