Colloquium №97

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Online

Bruhat interval polytopes which are cubes

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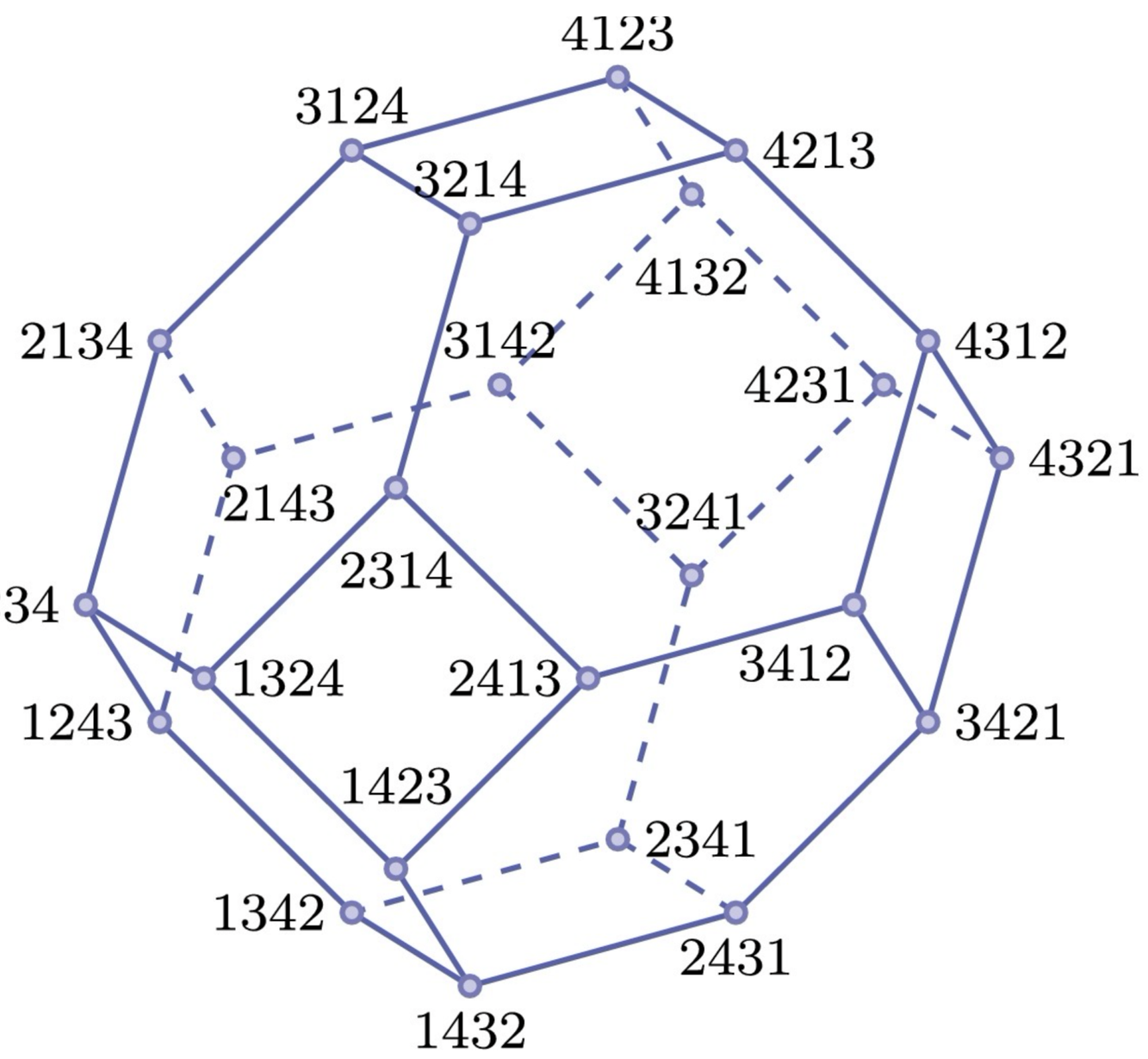
OCAMI / HSE



Abstract

For a pair of permutations with $v \leq w$ in the Bruhat order, the Bruhat interval polytope $\mathrm{Q}_{v,w}$ is defined as the convex hull of points associated with permutations z for $v \leq z \leq w$. It lies in a permutohedron and is an example of a Coxeter matroid polytope. The Bruhat interval polytope $\mathrm{Q}_{v,w}$ is the moment polytope of some subvariety of a flag variety called a Richardson variety and it is known that the Richardson variety is a smooth toric variety if and only if $\mathrm{Q}_{v,w}$ is combinatorially equivalent to a cube.

In this talk, I will explain that a certain family of Bruhat interval polytopes, which are particularly combinatorially equivalent to a cube, determines triangulations of a polygon. It turns out that the Wedderburn-Etherington numbers which count unordered binary trees appear in their classification. If time permits, I will discuss another family of Bruhat interval polytopes and their classification, where directed paths, more generally directed Dynkin diagrams appear. This talk is based on recent joint work with Eunjeong Lee (IBS-CGP) and Seonjeong Park (Jeonju Univ.).

Registration link

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