On a special class of general permutahedra

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Abstract

Minkowski sums of standard simplices in $\mathbb{R}^n$ form an interesting class of polytopes that seem to emerge in various situation. In this talk we discuss the Minkowski sum the standard simplices $\Delta_{k-1}$ in $\mathbb{R}^n$ where $k$ and $n$ are fixed, their flags and some of their face lattice structure. These polytopes are simple, include both the standard simplex $\Delta_{n-1}$ and the permutahedron $\Pi_{n-1}$, and can be viewed as a basis for more general permutahedra.

Keywords: Minkowski sum, face lattice, flags.