Counting lattice points of polytopes in terms of their orthant parts

Oliver Pfeiffer (Wien)

MON/P2
16:30–16:50

For $N \geq 0$ let $\mathscr{P}_N$ be a sequence of polytopes such that each polytope has the same full dimension N as the underlying Euclidian space $\mathbb{R}^N$. Motivated by earlier results for the regular octahedron (cf. [1]) we inspect the correlation between the lattice point count of $\mathscr{P}_N$ and of its 2^N orthant parts

$$\mathscr{Q}_{N,\varepsilon} = \mathscr{P}_N \cap \{(x_1, \ldots, x_N) \in \mathbb{R}^N \mid \varepsilon_n x_n \geq 0,\ 1 \leq n \leq N\}$$

for $\varepsilon = (\varepsilon_1, \ldots, \varepsilon_N) \in \{-1, 1\}^N$, under the condition that the $\mathscr{Q}_{N,\varepsilon}$ possess certain intersection properties.

[1] P. KIRSCHENHOFER, A. PETHŐ AND R. F. TICHY: On analytical and Diophantine properties of a family of counting polynomials. *Acta Sci. Math. (Szeged)*, **65** (1999), 47–59.