
ANTOINE DEZA, McMaster University

Lattice polytopes with large diameter and many vertices

A lattice (d, k) -polytope is the convex hull of a set of points in dimension d whose coordinates are integers between 0 and k . In this talk, we will introduce lattice polytopes generated by the primitive vectors of bounded norm. These primitive zonotopes can be seen as a generalization of the permutahedron of type B_d . We will highlight connections between the primitive zonotopes and the largest possible diameter of lattice (d, k) -polytopes, and between the computational complexity of multicriteria matroid optimization. Tightening of the bounds for the largest possible diameter of lattice (d, k) -polytopes, complexity results, conjectures, and open questions will be discussed.