
BOB ERDAHL, Queen's University

Reducible and irreducible Voronoi polytopes for lattices

There is an interesting question as to whether a Voronoi polytope can be written as the Minkowski sum of Voronoi polytopes in complementary subspaces. It is convenient to say that a Voronoi polytope is reducible if it can be written as such a Minkowski sum, but irreducible otherwise. This situation can be characterized in terms of the Venkov Graph, which will be defined in the course of the talk—the Voronoi polytope is irreducible if and only if the corresponding Venkov Graph is connected.

I will describe how the question of reducibility relates to the theory of metrical forms for lattices, the question of the number of distinct tilings that can be constructed from a given Voronoi polytope, and the Scaling Theorem of Matroid Theory.