
TED BISZTRICZKY, University of Calgary
Combinatorial Constructions of Polytopes

The face lattice of a (convex) polytope P is the set $L(P)$ of all faces of P , partially ordered by inclusion. It is known that $L(P)$ is an atomic and coatomic graded lattice. Two polytopes P and Q are combinatorially equivalent if $L(P)$ and $L(Q)$ are isomorphic. The combinatorial construction of a polytope is the construction of a lattice that is a face lattice. A geometrical realization of a polytope P is a polytope Q , in a real space of suitable dimension, that is combinatorially equivalent to P . We present both a combinatorial construction and a geometrical realization of a polytope.