By keyword

centered

A polytope is centered if the origin is contained in the interior of \conv $V \backslash v$ for all v *in* V

centergon(n) , prodsumpolygon(d,n) , sumcube(d) , sumpolygon(d,n)

centrally-symmetric

cube(d)

diameter

Diameter is used in two different senses. In the metric sense, it means the length of the longest line segment between points in a set (see e.g.). In the combinatorial sense, it is used to mean the length of the longest path in the skeleton of a polytope, or of a graph in general. See also ridge-diameter.

q4

dwarfed

A polytope P is called dwarfed if $(P) = (Q)$ \union h^+ where $f_0(P) << f_0(Q)$

dwarfcube(d)

equidecomposable

A polytope is called equidecomposable if every triangulation has the same f-vector

prodsimplex(d)

faces>>size

sum $f_k >> d(f_0+f_{d-1})$

prodcyclic(d,n) , prodsumcube(d) , prodsumpolygon(d,n)

facet-degenerate

(some) facets contain more than d vertices, i.e. not simplicial.

cube(d) , cut(n) , dwarfcube(d) , metric(n) , piercecube(d) , prodcyclic(d,n) , prodsimplex(d) , prodsumcube(d) , prodsumpolygon(d,n)

facets>>vertices

$f_{d-1} >> f_0$.

cyclic(n,d) , sumcube(d) , sumpolygon(d,n)

incremental

Incremental algorithms for e.g. facet-enumeration proceed by adding the input points one by one, updating the list of facet-defining inequalities for the current intermediate polytope at each step. See also double-description and Fourier-Motzkin elimination

piercecube(d) , prodcyclic(d,n) , prodsumcube(d) , prodsumpolygon(d,n)

neighbourly

each $k < floor(d/2)$ vertices forms a face.

cyclic(n,d)

ridge-diameter

The diameter (in the graph theoretic sense) of the dual polytope.

metric(n)

simple

Exactly d facets intersect at each vertex.

centergon(n) , cube(d) , dwarfcube(d) , permutahedron(n) , prodsimplex(d) , q4 , simplex(d) , sumpolygon(d,n)

simplicial

Exactly d vertices on each facet.

centergon(n) , cyclic(n,d) , simplex(d)

triangle-free

P has no triangular 2-face.

cube(d)

triangulation

A dissection of a polytope into simplices such that any pair intersect in a (possibly empty) face.

cube(d) , prodcyclic(d,n) , prodsimplex(d) , prodsumcube(d) , prodsumpolygon(d,n)

truncationpolytope

dwarfcube(d) , simplex(d)

vertex-degenerate

(some) vertices are contained in more than *d* facets, i.e. not simple. See also facet-degenerate.

prodcyclic(d,n) , prodsumcube(d) , prodsumpolygon(d,n)

vertices>>facets

See facets>>vertices

cube(d)

zero-one

A polytope is called zero-one if every vertex coordinate has one exactly two values (e.g. 0 or 1).

cube(d) , hypersimplex(d,k) , prodsumcube(d) , sumcube(d)

zonotope

A zonotope is the minkowski sum of a set of vectors.

cube(d) , permutahedron(n)

By Name

centergon(n)
    centered, simple, simplicial
cube(d)
    vertices>>facets, simple, triangle-free, facet-degenerate, centrally-symmetric, triangulation, zero-one, zonotope
cut(n)
    facet-degenerate
cyclic(n,d)
    facets>>vertices, simplicial, neighbourly
dwarfcube(d)
    simple, truncationpolytope, dwarfed, facet-degenerate
hamming(n)

- hypersimplex(d,k)
  - zero-one
- interval(a,b)
- metric(n)
  - facet-degenerate, ridge-diameter
- permutahedron(n)
  - simple, zonotope
- piercecube(d)
  - incremental, facet-degenerate
- prodcyclic(d,n)
  - incremental, vertex-degenerate, facet-degenerate, triangulation, faces>>size
- prodsimplex(d)
  - simple, facet-degenerate, triangulation, equidecomposable
- prodsumcube(d)
  - faces>>size, vertex-degenerate, facet-degenerate, triangulation, incremental, zero-one
- prodsumpolygon(d,n)
  - incremental, vertex-degenerate, facet-degenerate, triangulation, centered, faces>>size
- q4
  - simple, diameter
- simplex(d)
  - simple, simplicial, truncationpolytope
- sumcube(d)
  - centered, facets>>vertices, zero-one
- sumpolygon(d,n)
  - facets>>vertices, simple, centered