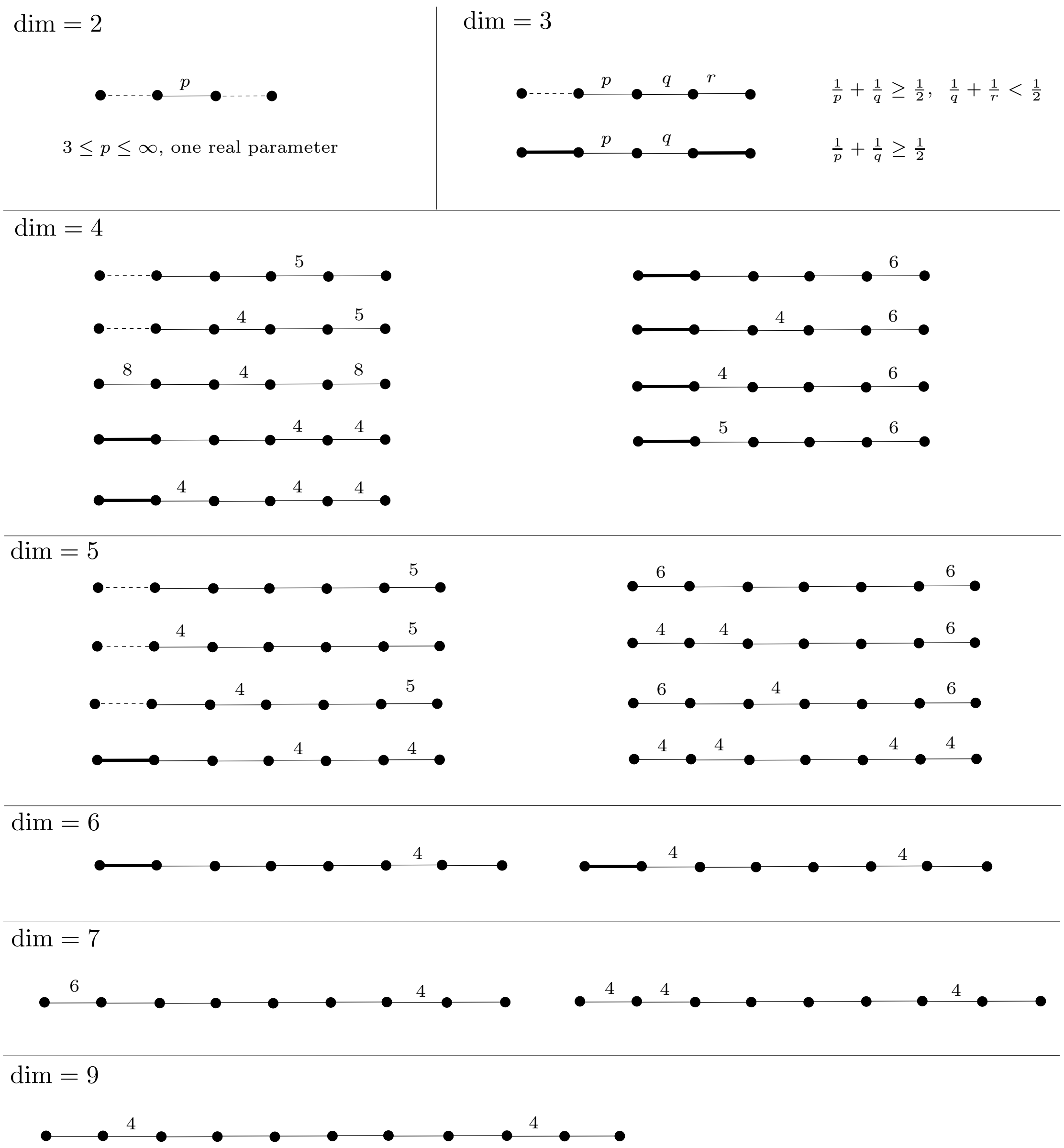
A *Napier cycle* is a set of $n+3$ vectors in $\mathbb{R}^{n,1}$ with a cyclic ordering, such that any two adjacent vectors have a negative product, whereas two non-adjacent vectors are orthogonal.

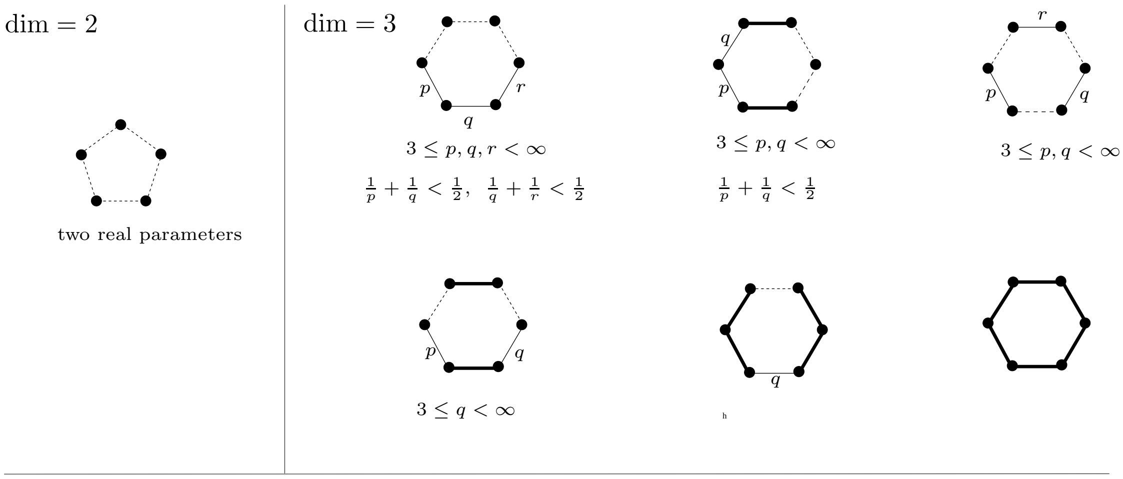
Let P be a polytope with orthogonal normals contained in a Napier cycle. Then (due to the definition) the valence of every vertex in the Coxeter diagram of P does not exceed 2.

Such a polytope is combinatorially equivalent to either a simplex, or to a truncated simplex, or to a twice truncated simplex. We will skip the list of simplices.

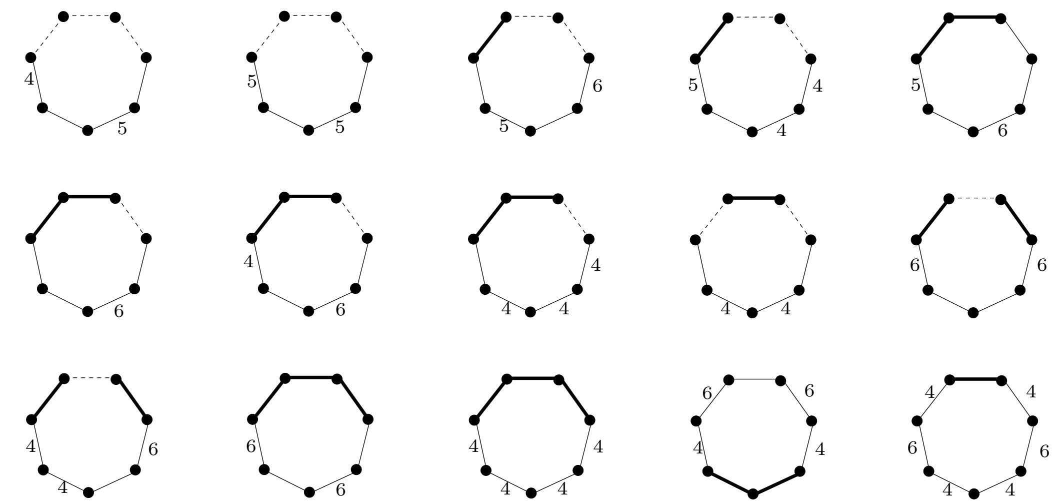
Truncated simplices from Napier cycles:



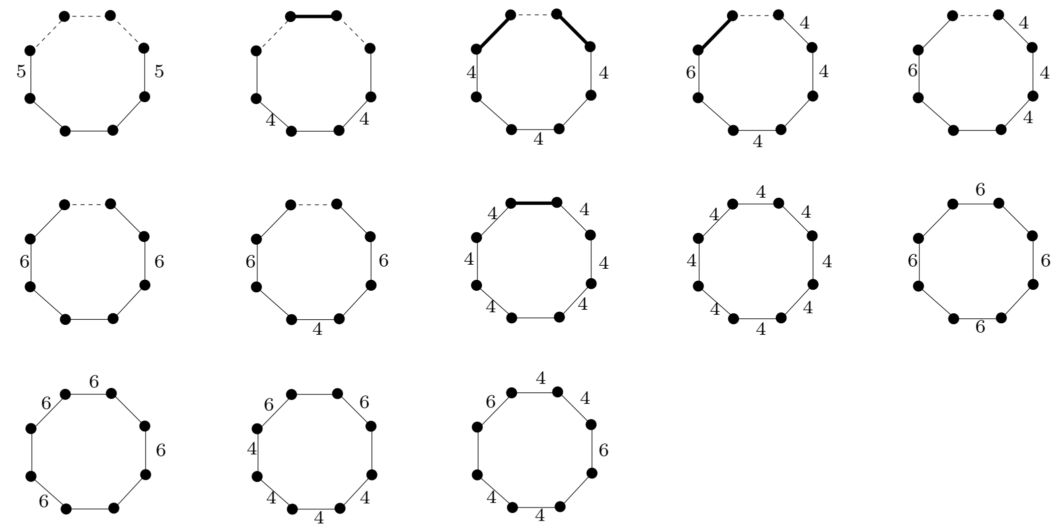
Twice truncated simplices from Napier cycles:

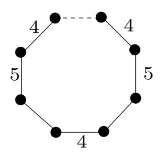


dim = 4



dim = 5



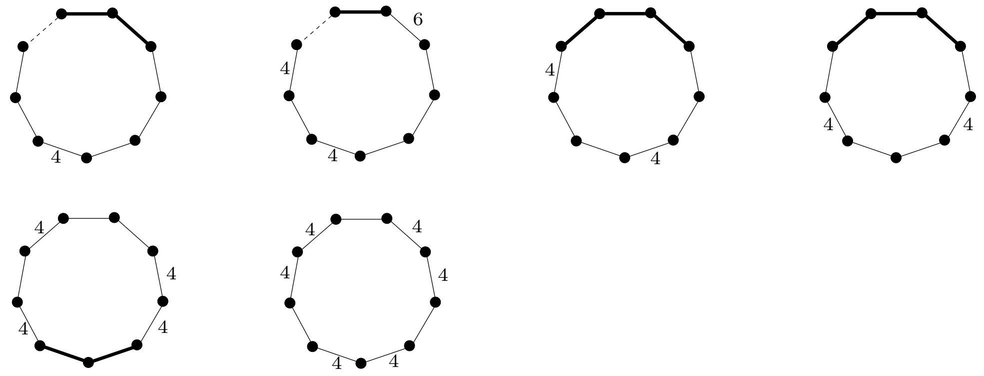


* The polytope in the last row first apperared in:

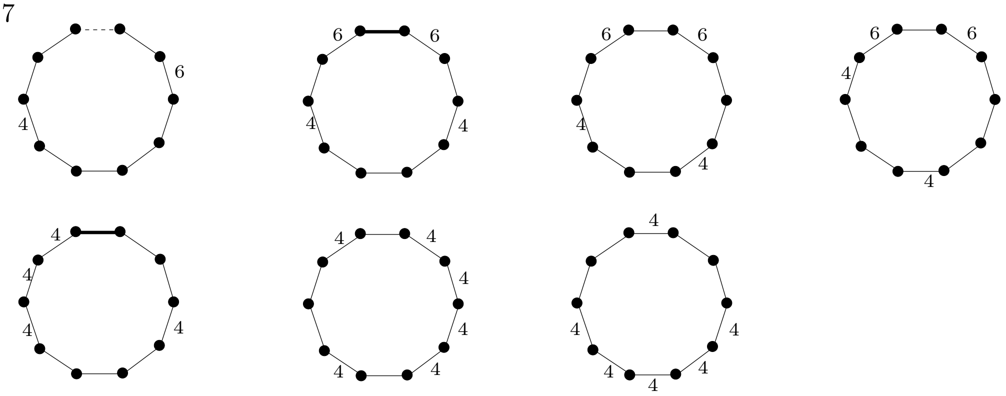
[Tum2] P. Tumarkin, *Compact hyperbolic Coxeter n-polytopes with n+3 facets*, Electron. J. Combin. 14 (2007).

Twice truncated simplices from Napier cycles, continued:

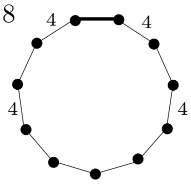
dim = 6



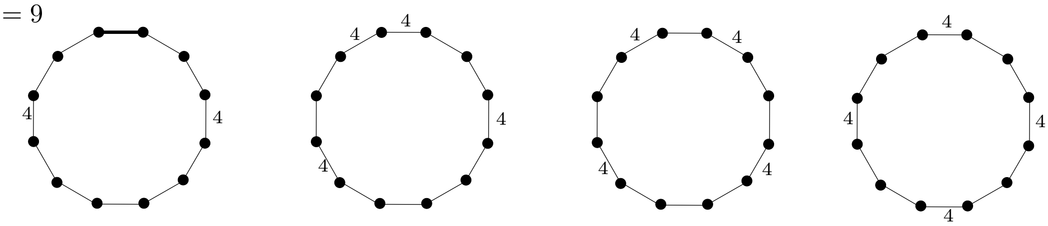
dim = 7



dim = 8



dim = 9



[ImH1] H.-Ch. Im Hof, *A class of hyperbolic Coxeter groups*, Expo. Math 3, 179-186 (1985).

[ImH2] H.-Ch. Im Hof, *Napier cycles and hyperbolic Coxeter groups*, Bull. Soc. Math. de Belg. Serie A, XLII (1990), 523545.