

Number of vertices $n = 12$.

Adjacencies of Graph

1. vertex 1 adjacent to 2 3 4 5 6
2. vertex 2 adjacent to 1 3 4 8 9
3. vertex 3 adjacent to 1 2 6 7 8
4. vertex 4 adjacent to 1 2 5 9 10
5. vertex 5 adjacent to 1 4 6 10 11
6. vertex 6 adjacent to 1 3 5 7 11
7. vertex 7 adjacent to 3 6 8 11 12
8. vertex 8 adjacent to 2 3 7 9 12
9. vertex 9 adjacent to 2 4 8 10 12
10. vertex 10 adjacent to 4 5 9 11 12
11. vertex 11 adjacent to 5 6 7 10 12
12. vertex 12 adjacent to 7 8 9 10 11

Size of automorphism group of the graph=120

Full group: $|Aut(polytope)| = 245760$

Restricted group: $|Aut(G) \times switch| = 245760$

Number of orbits for the full group : 4

List of orbits of facets for the full group: Total number of orbits = 4 Total number of facets = 1552

1. Inequality 1 with incidence 1536 and stabilizer of size 3072. Orbit size is 80 nature: 3-cycle inequality, $C=[6, 7, 3]$ $F=[6, 7]$

(1,2) : 0	(1,3) : 0	(1,4) : 0	(1,5) : 0	(1,6) : 0	(2,3) : 0
(2,4) : 0	(2,8) : 0	(2,9) : 0	(3,6) : 1	(3,7) : 1	(3,8) : 0
(4,5) : 0	(4,9) : 0	(4,10) : 0	(5,6) : 0	(5,10) : 0	(5,11) : 0
(6,7) : -1	(6,11) : 0	(7,8) : 0	(7,11) : 0	(7,12) : 0	(8,9) : 0
(8,12) : 0	(9,10) : 0	(9,12) : 0	(10,11) : 0	(10,12) : 0	(11,12) : 0

2. Inequality 2 with incidence 640 and stabilizer of size 1280. Orbit size is 192 nature: 5-cycle inequality, $C=[1, 2, 9, 10, 5]$ $F=[1, 2]$

(1,2) : -1	(1,3) : 0	(1,4) : 0	(1,5) : 1	(1,6) : 0	(2,3) : 0
(2,4) : 0	(2,8) : 0	(2,9) : 1	(3,6) : 0	(3,7) : 0	(3,8) : 0
(4,5) : 0	(4,9) : 0	(4,10) : 0	(5,6) : 0	(5,10) : 1	(5,11) : 0
(6,7) : 0	(6,11) : 0	(7,8) : 0	(7,11) : 0	(7,12) : 0	(8,9) : 0
(8,12) : 0	(9,10) : 1	(9,12) : 0	(10,11) : 0	(10,12) : 0	(11,12) : 0

3. Inequality 3 with incidence 384 and stabilizer of size 256. Orbit size is 960 nature: 6-cycle inequality, $C=[3, 6, 11, 10, 9, 8]$ $F=[3, 6]$

(1,2) : 0	(1,3) : 0	(1,4) : 0	(1,5) : 0	(1,6) : 0	(2,3) : 0
(2,4) : 0	(2,8) : 0	(2,9) : 0	(3,6) : -1	(3,7) : 0	(3,8) : 1
(4,5) : 0	(4,9) : 0	(4,10) : 0	(5,6) : 0	(5,10) : 0	(5,11) : 0
(6,7) : 0	(6,11) : 1	(7,8) : 0	(7,11) : 0	(7,12) : 0	(8,9) : 1
(8,12) : 0	(9,10) : 1	(9,12) : 0	(10,11) : 1	(10,12) : 0	(11,12) : 0

4. Inequality 4 with incidence 384 and stabilizer of size 768. Orbit size is 320 nature: 6-cycle inequality, $C=[3, 6, 5, 10, 9, 8]$ $F=[3, 6]$

(1,2) : 0	(1,3) : 0	(1,4) : 0	(1,5) : 0	(1,6) : 0	(2,3) : 0
(2,4) : 0	(2,8) : 0	(2,9) : 0	(3,6) : -1	(3,7) : 0	(3,8) : 1
(4,5) : 0	(4,9) : 0	(4,10) : 0	(5,6) : 1	(5,10) : 1	(5,11) : 0
(6,7) : 0	(6,11) : 0	(7,8) : 0	(7,11) : 0	(7,12) : 0	(8,9) : 1
(8,12) : 0	(9,10) : 1	(9,12) : 0	(10,11) : 0	(10,12) : 0	(11,12) : 0