

Number of vertices $n = 12$.

Adjacencies of Graph

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

Size of automorphism group of the graph=48

Full group: $|Aut(polytope)| = 98304$

Restricted group: $|Aut(G) \times switch| = 98304$

Number of orbits for the full group : 7

List of orbits of facets for the full group: Total number of orbits = 7 Total number of facets = 62140

1. Inequality 1 with incidence 1024 and stabilizer of size 4096. Orbit size is 24 nature: 4-cycle inequality, $C=[2, 11, 12, 3]$ $F=[2, 11]$

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

2. Inequality 2 with incidence 1024 and stabilizer of size 4096. Orbit size is 24 nature: edge inequality $e=[1, 8]$

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

3. Inequality 3 with incidence 1024 and stabilizer of size 8192. Orbit size is 12 nature: edge inequality $e=[7, 12]$

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

4. Inequality 4 with incidence 384 and stabilizer of size 256. Orbit size is 384 nature: 6-cycle inequality, $C=[4, 5, 6, 1, 8, 9]$ $F=[4, 5]$

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

5. Inequality 5 with incidence 384 and stabilizer of size 384. Orbit size is 256 nature: 6-cycle inequality, $C=[1, 2, 11, 10, 5, 6]$ $F=[1, 2]$

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

6. Inequality 6 with incidence 32 and stabilizer of size 8. Orbit size is 12288 nature: unknown

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

7. Inequality 7 with incidence 27 and stabilizer of size 2. Orbit size is 49152 nature: unknown

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