The Cone 2HMET6

13th January 2002

1 The intrisic informations concerning the graph of extreme rays of 2HMET6.ext

The graph considered is made of 12492 elements.
The group acting on 2HMET6.ext is Group2hmet6
Under the group action we have in fact only 41 orbits to consider.
The diameter of the graph is 3.
The list of orbits is with adjacency and Size info:

E1:	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	1	2778	15
E2:	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	1	1	0	1321	60
E3:	0	0	1	1	1	0	1	1	0	0	1	1	0	0	1	0	0	0	1	1	1030	12
E4:	0	0	0	0	0	1	1	1	1	0	0	1	1	1	1	0	0	0	0	0	818	15
E5:	0	0	0	0	0	0	1	1	0	1	0	0	1	1	0	1	1	1	0	0	731	180
E6:	0	0	0	1	0	1	0	1	1	0	0	1	1	1	0	1	0	1	1	0	358	180
E7:	0	0	1	1	1	0	1	1	0	0	1	1	0	0	1	0	0	2	1	1	270	120
E8:	0	0	1	1	1	0	1	1	0	2	1	1	2	2	1	0	0	0	1	1	93	120
E9:	0	0	1	1	1	0	1	1	0	2	1	1	0	2	1	0	0	2	1	1	66	240
E10:	0	0	1	1	1	0	1	1	0	2	1	1	0	0	1	2	0	2	1	1	51	360
E11:	0	0	1	1	1	0	1	0	1	1	1	1	0	1	0	1	1	1	0	2	47	120
E12:	0	0	0	1	0	0	1	0	1	2	0	0	2	0	2	1	0	2	1	1	46	60
E13:	0	0	0	1	0	0	1	1	1	2	0	0	2	1	2	1	1	2	1	0	37	360
E14:	0	0	0	1	0	0	1	2	2	2	0	0	2	2	1	1	2	1	1	0	37	180
E15:	0	0	0	2	0	0	2	2	1	1	0	0	2	2	1	1	2	1	1	0	37	60
E16:	0	0	0	2	0	3	1	3	1	1	0	3	1	3	1	1	0	2	1	1	32	90
E17:	0	0	0	1	0	1	1	2	2	2	0	1	2	2	1	1	1	1	0	0	30	720
E18:	0	0	0	2	0	1	2	2	1	1	0	1	2	2	1	1	1	1	0	0	30	360
E19:	0	0	0	1	0	1	1	1	1	2	0	1	2	1	2	1	2	2	0	0	30	360
E20:	0	0	0	2	0	2	1	2	1	1	0	2	1	2	1	1	2	2	0	0	30	180
E21:	0	0	0	2	0	1	1	1	1	2	0	1	1	1	1	2	2	2	0	0	30	180
E22:	0	0	0	2	0	2	1	3	1	1	0	2	1	3	1	1	1	2	0	1	29	360
E23:	0	0	0	2	0	1	1	2	1	1	0	1	1	2	1	1	1	2	3	0	29	360
E24:	0	0	1	1	1	0	1	0	2	2	1	1	2	1	1	0	1	0	1	2	27	360
E25:	0	0	0	1	1	1	1	2	2	2	1	1	2	2	1	1	0	0	0	0	27	360
E26:	0	0	1	1	2	0	1	0	1	2	2	1	2	1	2	0	2	0	1	1	27	360
E27:	0	0	1	2	3	0	1	3	1	1	3	1	1	2	1	0	0	1	2	1	27	360
E28:	0	0	1	2	2	1	2	1	2	0	2	2	0	2	0	1	0	2	1	1	27	180
E29:	0	0	0	2	1	1	2	2	1	1	1	1	2	2	1	1	0	0	0	0	27	180
E30:	0	0	0	2	2	2	1	2	1	1	2	2	1	2	1	1	0	0	0	0	27	60
E31:	0	0	1	2	1	1	1	2	1	0	1	2	1	1	1	1	0	3	0	3	26	720
E32:	0	0	0	2	1	1	1	2	1	1	1	1	1	2	1	1	0	3	3	0	26	180
E33:	0	0	1	1	2	0	1	1	1	2	2	1	2	2	2	0	1	0	1	0	25	720
E34:	0	0	1	1	1	0	2	1	1	2	1	1	1	2	2	0	2	0	2	0	25	720
E35:	0	0	1	1	0	1	2	2	1	0	0	2	1	1	2	0	1	3	1	1	25	360
E36:	0	0	1	1	0	1	2	2	1	0	0	2	1	1	2	0	1	1	1	3	25	360
E37:	0	0	1	1	1	0	1	2	2	2	1	1	2	1	1	0	1	0	1	0	25	360
E38:	0	0	1	1	1	0	2	2	1	1	1	1	1	1	2	3	1	0	1	0	23	720
E39:	0	0	1	2	1	1	1	2	0	1	1	2	1	1	2	0	0	2	3	1	22	720
E40:	0	0	1	2	1	1	2	2	1	0	1	2	0	1	3	1	0	2	1	1	22	720
E41:	0	0	1	2	2	1	1	1	1	1	2	2	1	2	1	0	0	0	3	3	21	360

The representation matrix is:

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14	E15	E16	E17	E18	E19	E20	E21	E22	E23	E24	E25	E26	E27	E28	E29	E30	E31	E32	E33	E34	E35	E36	E37	E38	E39	E40	E41	Adj.	Size
E1	14	56	12	12	144	84	48	48	96	144	48	28	144	60	28	0	240	144	120	36	60	24	48	72	120	72	0	36	72	12	48	12	144	144	48	48	120	96	48	48	0	2778	15
E2	14	38	6	9	102	84	54	24	48	54	24	9	42	12	6	9	48	30	36	15	15	30	24	36	24	24	36	18	15	6	60	15	48	60	24	24	24	48	48	48	30	1321	60
E3	15	30	5	5	90	75	30	20	40	0	0	0	0	30	0	0	60	0	0	0	0	0	60	0	0	60	30	0	0	0	60	30	60	0	0	30	0	60	120	60	60	1030	12
E4	12	36	4	6	72	84	48	8	16	0	16	0	0	0	0	12	48	24	0	24	0	48	0	0	48	0	24	0	24	0	48	0	48	0	48	24	0	48	0	48	0	818	15
E5	12	34	6	6	85	66	34	14	24	24	14	2	16	12	2	2	36	12	20	6	10	10	18	12	14	14	8	6	6	4	20	6	24	32	12	14	16	24	24	20	10	731	180
E6	7	28	5	7	66	35	18	8	4	12	4	2	8	0	2	2	4	8	4	4	2	8	4	8	4	4	6	4	2	0	16	4	12	12	6	6	4	8	8	8	4	358	180
E7	6	27	3	6	51	27	15	3	6	6	0	3	12	3	0	3	6	0	6	0	3	6	0	9	0	6	9	0	0	0	6	0	6	6	3	0	3	6	6	12	6	270	120
E8	6	12	2	1	21	12	3	0	0	0	0	0	0	0	0	3	0	0	0	3	0	6	0	0	0	0	6	0	0	0	6	0	6	0	0	0	0	0	0	6	0	93	120
E9	6	12	2	1	18	3	3	0	3	0	0	0	0	3	0	0	3	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	66	240
E10	6	9	0	0	12	6	2	0	0	4	0	1	2	0	1	0	0	2	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	2	0	0	1	0	0	0	0	51	360
E11	6	12	0	2	21	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	120
E12	7	9	0	0	6	6	6	0	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	60
E13	6	7	0	0	8	4	4	0	0	2	0	1	0	0	0	0	0	0	2	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	360
E14	5	4	2	0	12	0	2	0	4	0	0	0	0	0	0	0	4	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	180
E15	7	6	0	0	6	6	0	0	0	6	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	60
E16	0	6	0	2	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	90
E17	5	4	1	1	9	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	1	1	0	0	0	30	720
E18	6	5	0	1	6	4	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	30	360
E19	5	6	0	0	10	2	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	30	360
E20	3	5	0	2	6	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	30	180
E21	5	5	0	0	10	2	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	30	180
E22	1	5	0	2	5	4	2	2	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	2	0	29	360
E23	2	4	2	0	9	2	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	2	2	0	0	29	360
E24	3	6	0	0	6	4	3	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	27	360
E25	5	4	0	2	7	2	0	0	0	0	0	0	0	0	0	0	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	27	360
E26	3	4	2	0	7	2	2	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	27	360
E27	0	6	1	1	4	3	3	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	2	27	360
E28	3	6	0	0	6	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	27	180
E29	6	5	0	2	6	2	0	0	0	0	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	180
E30	3	6	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	60
E31	1	5	1	1	5	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	1	1	0	0	26	720
E32	1	5	2	0	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	2	26	180
E33	3	4	1	1	6	3	1	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	25	720
E34	3	5	0	0	8	3	1	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	25	720
E35	2	4	0	2	6	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	25	360
E36	2	4	1	1	7	3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	25	360
E37	5	4	0	0	8	2	1	0	0	1	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	360
E38	2	4	1	1	6	2	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	23	720
E39	1	4	2	0	6	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	22	720
E40	1	4	1	1	5	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	22	720
E41	0	5	2	0	5	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	2	0	0	21	360
Size	15	60	12	15	180	180	120	120	240	360	120	60	360	180	60	90	720	360	360	180	180	360	360	360	360	360	360	180	180	60	720	180	720	720	360	360	360	720	720	720	360		12492

No complemented local graph of size inferior to 20.

1.1 scalar product between elements of orbits

This subsection made sense only if the representation is orthogonal which is the usual case Considering Orbit 1

1. Orbit Size is 15.
2. Norm of elements is 4.
3. Possible scalar product : 0, 1

Considering Orbit 2

1. Orbit Size is 60.
2. Norm of elements is 6.
3. Possible scalar product : 0, 1, 2, 3, 4

Considering Orbit 3

1. Orbit Size is 12.
2. Norm of elements is 10.

3. Possible scalar product : 0, 4, 6

Considering Orbit 4

1. Orbit Size is 15.
2. Norm of elements is 8.
3. Possible scalar product : 2, 4

Considering Orbit 5

1. Orbit Size is 180.
2. Norm of elements is 8.
3. Possible scalar product : 0, 1, 2, 3, 4, 5, 6

Considering Orbit 6

1. Orbit Size is 180.
2. Norm of elements is 10.
3. Possible scalar product : 0, 2, 3, 4, 5, 6, 7, 8

Considering Orbit 7

1. Orbit Size is 120.
2. Norm of elements is 14.
3. Possible scalar product : 4, 6, 8, 10

Considering Orbit 8

1. Orbit Size is 120.
2. Norm of elements is 22.
3. Possible scalar product : 6, 8, 10, 12, 14, 16, 18

Considering Orbit 9

1. Orbit Size is 240.
2. Norm of elements is 22.
3. Possible scalar product : 6, 8, 10, 12, 14, 16, 18

Considering Orbit 10

1. Orbit Size is 360.
2. Norm of elements is 22.
3. Possible scalar product : 8, 10, 12, 14, 16, 18

Considering Orbit 11

1. Orbit Size is 120.
2. Norm of elements is 16.

3. Possible scalar product : 6, 8, 10, 12

Considering Orbit 12

1. Orbit Size is 60.
2. Norm of elements is 22.
3. Possible scalar product : 6, 7, 8, 9, 10, 19, 20

Considering Orbit 13

1. Orbit Size is 360.
2. Norm of elements is 24.
3. Possible scalar product : 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22

Considering Orbit 14

1. Orbit Size is 180.
2. Norm of elements is 30.
3. Possible scalar product : 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 27

Considering Orbit 15

1. Orbit Size is 60.
2. Norm of elements is 30.
3. Possible scalar product : 11, 12, 15, 16, 17, 18, 19, 22

Considering Orbit 16

1. Orbit Size is 90.
2. Norm of elements is 52.
3. Possible scalar product : 18, 23, 27, 28, 29, 30, 32, 33, 34, 36, 37, 40

Considering Orbit 17

1. Orbit Size is 720.
2. Norm of elements is 28.
3. Possible scalar product : 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25

Considering Orbit 18

1. Orbit Size is 360.
2. Norm of elements is 28.
3. Possible scalar product : 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25

Considering Orbit 19

1. Orbit Size is 360.
2. Norm of elements is 28.

3. Possible scalar product : 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25

Considering Orbit 20

1. Orbit Size is 180.
2. Norm of elements is 34.
3. Possible scalar product : 12, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29

Considering Orbit 21

1. Orbit Size is 180.
2. Norm of elements is 28.
3. Possible scalar product : 8, 12, 14, 16, 18, 20, 22, 24

Considering Orbit 22

1. Orbit Size is 360.
2. Norm of elements is 42.
3. Possible scalar product : 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 34, 35, 39

Considering Orbit 23

1. Orbit Size is 360.
2. Norm of elements is 34.
3. Possible scalar product : 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 30, 31

Considering Orbit 24

1. Orbit Size is 360.
2. Norm of elements is 26.
3. Possible scalar product : 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Considering Orbit 25

1. Orbit Size is 360.
2. Norm of elements is 28.
3. Possible scalar product : 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25

Considering Orbit 26

1. Orbit Size is 360.
2. Norm of elements is 32.
3. Possible scalar product : 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 29

Considering Orbit 27

1. Orbit Size is 360.
2. Norm of elements is 48.

3. Possible scalar product : 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 44, 45

Considering Orbit 28

1. Orbit Size is 180.
2. Norm of elements is 38.
3. Possible scalar product : 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 33, 36

Considering Orbit 29

1. Orbit Size is 180.
2. Norm of elements is 28.
3. Possible scalar product : 8, 12, 14, 16, 18, 20, 22, 24

Considering Orbit 30

1. Orbit Size is 60.
2. Norm of elements is 34.
3. Possible scalar product : 15, 16, 19, 20, 21, 22, 26

Considering Orbit 31

1. Orbit Size is 720.
2. Norm of elements is 40.
3. Possible scalar product : 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 36, 37

Considering Orbit 32

1. Orbit Size is 180.
2. Norm of elements is 40.
3. Possible scalar product : 12, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 36

Considering Orbit 33

1. Orbit Size is 720.
2. Norm of elements is 32.
3. Possible scalar product : 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29

Considering Orbit 34

1. Orbit Size is 720.
2. Norm of elements is 32.
3. Possible scalar product : 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30

Considering Orbit 35

1. Orbit Size is 360.

2. Norm of elements is 34.

3. Possible scalar product : 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31

Considering Orbit 36

1. Orbit Size is 360.

2. Norm of elements is 34.

3. Possible scalar product : 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31

Considering Orbit 37

1. Orbit Size is 360.

2. Norm of elements is 26.

3. Possible scalar product : 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Considering Orbit 38

1. Orbit Size is 720.

2. Norm of elements is 32.

3. Possible scalar product : 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29

Considering Orbit 39

1. Orbit Size is 720.

2. Norm of elements is 38.

3. Possible scalar product : 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35

Considering Orbit 40

1. Orbit Size is 720.

2. Norm of elements is 38.

3. Possible scalar product : 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35

Considering Orbit 41

1. Orbit Size is 360.

2. Norm of elements is 46.

3. Possible scalar product : 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 43

1.2 invariant group of Orbits

The invariant group of x is the set of g such that $g(x) = x$ denoted by G_x.
If x and y are in the same orbit then the groups G_x and G_y are conjuguate.
For any element x we denote O_x its Orbit, we have $|O_x| \times |G_x| = |G|$ We print only nontrivial groups
Invariant group of Orbit 1:

1. Group Size is 48.
2. Elements are : (4 3 2 1 6 5), (4 3 1 2 6 5), (4 2 3 1 6 5), (4 1 3 2 6 5), (4 2 1 3 6 5), (4 1 2 3 6 5), (3 4 2 1 6 5), (3 4 1 2 6 5), (2 4 3 1 6 5), (1 4 3 2 6 5), (2 4 1 3 6 5), (1 4 2 3 6 5), (3 2 4 1 6 5), (3 1 4 2 6 5), (2 3 4 1 6 5), (1 3 4 2 6 5), (2 1 4 3 6 5), (1 2 4 3 6 5), (3 2 1 4 6 5), (3 1 2 4 6 5), (2 3 1 4 6 5), (1 3 2 4 6 5), (2 1 3 4 6 5), (1 2 3 4 6 5), (4 3 2 1 5 6), (4 3 1 2 5 6), (4 2 3 1 5 6), (4 1 3 2 5 6), (4 2 1 3 5 6), (4 1 2 3 5 6), (3 4 2 1 5 6), (3 4 1 2 5 6), (2 4 3 1 5 6), (1 4 3 2 5 6), (2 4 1 3 5 6), (1 4 2 3 5 6), (3 2 4 1 5 6), (3 1 4 2 5 6), (2 3 4 1 5 6), (1 3 4 2 5 6), (2 1 4 3 5 6), (1 2 4 3 5 6), (3 2 1 4 5 6), (3 1 2 4 5 6), (2 3 1 4 5 6), (1 3 2 4 5 6), (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 2:

1. Group Size is 12.
2. Elements are : (3 2 1 5 4 6), (3 1 2 5 4 6), (2 3 1 5 4 6), (1 3 2 5 4 6), (2 1 3 5 4 6), (1 2 3 5 4 6), (3 2 1 4 5 6), (3 1 2 4 5 6), (2 3 1 4 5 6), (1 3 2 4 5 6), (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 3:

1. Group Size is 60.
2. Elements are : (6 5 1 2 4 3), (6 5 2 1 3 4), (6 1 5 4 2 3), (6 2 5 3 1 4), (6 1 4 5 3 2), (6 2 3 5 4 1), (6 4 1 3 5 2), (6 3 2 4 5 1), (6 4 3 1 2 5), (6 3 4 2 1 5), (5 6 2 1 4 3), (5 6 1 2 3 4), (1 6 5 4 3 2), (2 6 5 3 4 1), (1 6 4 5 2 3), (2 6 3 5 1 4), (4 6 3 1 5 2), (3 6 4 2 5 1), (4 6 1 3 2 5), (3 6 2 4 1 5), (5 2 6 4 1 3), (5 1 6 3 2 4), (2 5 6 4 3 1), (1 5 6 3 4 2), (4 3 6 5 1 2), (3 4 6 5 2 1), (1 4 6 2 5 3), (2 3 6 1 5 4), (4 1 6 2 3 5), (3 2 6 1 4 5), (5 2 4 6 3 1), (5 1 3 6 4 2), (2 5 4 6 1 3), (1 5 3 6 2 4), (4 3 5 6 2 1), (3 4 5 6 1 2), (4 1 2 6 5 3), (3 2 1 6 5 4), (1 4 2 6 3 5), (2 3 1 6 4 5), (5 4 2 3 6 1), (5 3 1 4 6 2), (4 5 3 2 6 1), (3 5 4 1 6 2), (2 4 5 1 6 3), (1 3 5 2 6 4), (4 2 1 5 6 3), (3 1 2 5 6 4), (1 2 4 3 6 5), (2 1 3 4 6 5), (5 4 3 2 1 6), (5 3 4 1 2 6), (4 5 2 3 1 6), (3 5 1 4 2 6), (4 2 5 1 3 6), (3 1 5 2 4 6), (2 4 1 5 3 6), (1 3 2 5 4 6), (2 1 4 3 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 4:

1. Group Size is 48.
2. Elements are : (6 5 4 3 2 1), (6 5 4 3 1 2), (6 5 3 4 2 1), (6 5 3 4 1 2), (6 5 2 1 4 3), (6 5 1 2 4 3), (6 5 2 1 3 4), (6 5 1 2 3 4), (5 6 4 3 2 1), (5 6 4 3 1 2), (5 6 3 4 2 1), (5 6 3 4 1 2), (5 6 2 1 4 3), (5 6 1 2 4 3), (5 6 2 1 3 4), (5 6 1 2 3 4), (4 3 6 5 2 1), (4 3 6 5 1 2), (3 4 6 5 2 1), (3 4 6 5 1 2), (2 1 6 5 4 3), (1 2 6 5 4 3), (2 1 6 5 3 4), (1 2 6 5 3 4), (4 3 5 6 2 1), (4 3 5 6 1 2), (3 4 5 6 2 1), (3 4 5 6 1 2), (2 1 5 6 4 3), (1 2 5 6 4 3), (2 1 5 6 3 4), (1 2 5 6 3 4), (4 3 2 1 6 5), (4 3 1 2 6 5), (3 4 2 1 6 5), (3 4 1 2 6 5), (2 1 4 3 6 5), (1 2 4 3 6 5), (2 1 3 4 6 5), (1 2 3 4 6 5), (4 3 2 1 5 6), (4 3 1 2 5 6), (3 4 2 1 5 6), (3 4 1 2 5 6), (2 1 4 3 5 6), (1 2 4 3 5 6), (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 5:

1. Group Size is 4.
2. Elements are : (2 1 4 3 6 5), (1 2 4 3 6 5), (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 6:

1. Group Size is 4.
2. Elements are : (4 2 3 1 6 5), (1 3 2 4 6 5), (4 3 2 1 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 7:

1. Group Size is 6.
2. Elements are : (5 2 6 4 1 3), (5 1 6 3 2 4), (2 5 4 6 1 3), (1 5 3 6 2 4), (2 1 4 3 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 8:

1. Group Size is 6.
2. Elements are : (4 6 3 1 5 2), (4 6 1 3 2 5), (3 5 4 1 6 2), (1 2 4 3 6 5), (3 5 1 4 2 6), (1 2 3 4 5 6)

Invariant group of Orbit 9:

1. Group Size is 3.
2. Elements are : (2 3 1 6 4 5), (3 1 2 5 6 4), (1 2 3 4 5 6)

Invariant group of Orbit 10:

1. Group Size is 2.
2. Elements are : (2 1 4 3 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 11:

1. Group Size is 6.
2. Elements are : (3 2 1 6 5 4), (2 3 1 6 4 5), (3 1 2 5 6 4), (2 1 3 4 6 5), (1 3 2 5 4 6), (1 2 3 4 5 6)

Invariant group of Orbit 12:

1. Group Size is 12.
2. Elements are : (5 4 3 2 1 6), (5 4 2 3 1 6), (5 3 4 2 1 6), (5 2 4 3 1 6), (5 3 2 4 1 6), (5 2 3 4 1 6), (1 4 3 2 5 6), (1 4 2 3 5 6), (1 3 4 2 5 6), (1 2 4 3 5 6), (1 3 2 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 13:

1. Group Size is 2.
2. Elements are : (1 3 2 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 14:

1. Group Size is 4.
2. Elements are : (1 3 2 5 4 6), (1 2 3 5 4 6), (1 3 2 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 15:

1. Group Size is 12.
2. Elements are : (3 2 1 5 4 6), (3 1 2 5 4 6), (2 3 1 5 4 6), (1 3 2 5 4 6), (2 1 3 5 4 6), (1 2 3 5 4 6), (3 2 1 4 5 6), (3 1 2 4 5 6), (2 3 1 4 5 6), (1 3 2 4 5 6), (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 16:

1. Group Size is 8.

2. Elements are : (4 3 2 1 5 6), (4 3 1 2 5 6), (3 4 2 1 5 6), (3 4 1 2 5 6), (2 1 4 3 5 6), (1 2 4 3 5 6), (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 18:

1. Group Size is 2.
2. Elements are : (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 19:

1. Group Size is 2.
2. Elements are : (1 2 4 3 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 20:

1. Group Size is 4.
2. Elements are : (2 1 4 3 5 6), (1 2 4 3 5 6), (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 21:

1. Group Size is 4.
2. Elements are : (2 1 4 3 5 6), (1 2 4 3 5 6), (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 22:

1. Group Size is 2.
2. Elements are : (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 23:

1. Group Size is 2.
2. Elements are : (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 24:

1. Group Size is 2.
2. Elements are : (1 3 2 5 4 6), (1 2 3 4 5 6)

Invariant group of Orbit 25:

1. Group Size is 2.
2. Elements are : (1 2 3 5 4 6), (1 2 3 4 5 6)

Invariant group of Orbit 26:

1. Group Size is 2.
2. Elements are : (1 2 4 3 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 27:

1. Group Size is 2.
2. Elements are : (3 5 1 4 2 6), (1 2 3 4 5 6)

Invariant group of Orbit 28:

1. Group Size is 4.
2. Elements are : (6 2 4 3 5 1), (6 2 3 4 5 1), (1 2 4 3 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 29:

1. Group Size is 4.
2. Elements are : (2 1 3 5 4 6), (1 2 3 5 4 6), (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 30:

1. Group Size is 12.
2. Elements are : (2 1 5 4 3 6), (1 2 5 4 3 6), (2 1 5 3 4 6), (1 2 5 3 4 6), (2 1 4 5 3 6), (1 2 4 5 3 6), (2 1 3 5 4 6), (1 2 3 5 4 6), (2 1 4 3 5 6), (1 2 4 3 5 6), (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 32:

1. Group Size is 4.
2. Elements are : (2 1 3 5 4 6), (1 2 3 5 4 6), (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 35:

1. Group Size is 2.
2. Elements are : (2 1 4 3 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 36:

1. Group Size is 2.
2. Elements are : (2 1 3 4 6 5), (1 2 3 4 5 6)

Invariant group of Orbit 37:

1. Group Size is 2.
2. Elements are : (1 3 2 5 4 6), (1 2 3 4 5 6)

Invariant group of Orbit 41:

1. Group Size is 2.
2. Elements are : (1 2 4 3 5 6), (1 2 3 4 5 6)

2 The intrisic informations concerning the graph of facet rays of 2HMET6.ine

The graph considered is made of 80 elements.
The group acting on 2HMET6.ine is Group2hmet6
Under the group action we have in fact only 2 orbits to consider.
The diameter of the graph is 2.
The list of orbits is with adjacency and Size info:

F1:	-1	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	75	60
F2:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	67	20

The representation matrix is:

	F1	F2	Adj.	Size
F1	56	19	75	60
F2	57	10	67	20
Size	60	20		80

No complemented local graph of size inferior to 20.

2.1 scalar product between elements of orbits

This subsection made sense only if the representation is orthogonal which is the usual case Considering Orbit 1

1. Orbit Size is 60.
2. Norm of elements is 4.
3. Possible scalar product : -1, 0, 1

Considering Orbit 2

1. Orbit Size is 20.
2. Norm of elements is 1.
3. Possible scalar product : 0

2.2 invariant group of Orbits

The invariant group of x is the set of g such that $g(x) = x$ denoted by G_x.
If x and y are in the same orbit then the groups G_x and G_y are conjuguate.
For any element x we denote O_x its Orbit, we have $|O_x| \times |G_x| = |G|$ We print only nontrivial groups
Invariant group of Orbit 1:

1. Group Size is 12.
2. Elements are : (3 2 1 5 4 6), (3 1 2 5 4 6), (2 3 1 5 4 6), (1 3 2 5 4 6), (2 1 3 5 4 6), (1 2 3 5 4 6), (3 2 1 4 5 6), (3 1 2 4 5 6), (2 3 1 4 5 6), (1 3 2 4 5 6), (2 1 3 4 5 6), (1 2 3 4 5 6)

Invariant group of Orbit 2:

1. Group Size is 36.
2. Elements are : (3 2 1 6 5 4), (3 1 2 6 5 4), (2 3 1 6 5 4), (1 3 2 6 5 4), (2 1 3 6 5 4), (1 2 3 6 5 4), (3 2 1 6 4 5), (3 1 2 6 4 5), (2 3 1 6 4 5), (1 3 2 6 4 5), (2 1 3 6 4 5), (1 2 3 6 4 5), (3 2 1 5 6 4), (3 1 2 5 6 4), (2 3 1 5 6 4), (1 3 2 5 6 4), (2 1 3 5 6 4), (1 2 3 5 6 4), (3 2 1 4 6 5), (3 1 2 4 6 5), (2 3 1 4 6 5), (1 3 2 4 6 5), (2 1 3 4 6 5), (1 2 3 4 6 5), (3 2 1 5 4 6), (3 1 2 5 4 6), (2 3 1 5 4 6), (1 3 2 5 4 6), (2 1 3 5 4 6), (1 2 3 5 4 6), (3 2 1 4 5 6), (3 1 2 4 5 6), (2 3 1 4 5 6), (1 3 2 4 5 6), (2 1 3 4 5 6), (1 2 3 4 5 6)

3 The two incidence matrix

Incidence between Orbit of Extreme rays and Orbits of Facets

	$F1$	$F2$	Inc
$E1$	48	16	64
$E2$	42	14	56
$E3$	30	10	40
$E4$	36	12	48
$E5$	36	12	48
$E6$	30	10	40
$E7$	27	9	36
$E8$	21	7	28
$E9$	21	7	28
$E10$	21	7	28
$E11$	21	7	28
$E12$	29	10	39
$E13$	23	8	31
$E14$	23	8	31
$E15$	23	8	31
$E16$	22	6	28
$E17$	20	7	27
$E18$	20	7	27
$E19$	20	7	27
$E20$	19	7	26
$E21$	20	7	27
$E22$	20	6	26
$E23$	20	6	26
$E24$	17	6	23
$E25$	20	7	27
$E26$	17	6	23
$E27$	18	5	23
$E28$	17	6	23
$E29$	20	7	27
$E30$	19	7	26
$E31$	18	5	23
$E32$	19	5	24
$E33$	17	6	23
$E34$	17	6	23
$E35$	19	6	25
$E36$	19	6	25
$E37$	17	6	23
$E38$	17	5	22
$E39$	16	5	21
$E40$	16	5	21
$E41$	16	5	21

Incidence between Orbits of Facets and Orbits of Extreme Rays

	$E1$	$E2$	$E3$	$E4$	$E5$	$E6$	$E7$	$E8$	$E9$	$E10$	$E11$	$E12$	$E13$	$E14$	$E15$	$E16$	$E17$	$E18$	$E19$	$E20$	$E21$
$F1$	12	42	6	9	108	90	54	42	84	126	42	29	138	69	23	33	240	120	120	57	60
$F2$	12	42	6	9	108	90	54	42	84	126	42	30	144	72	24	27	252	126	126	63	63

	$E22$	$E23$	$E24$	$E25$	$E26$	$E27$	$E28$	$E29$	$E30$	$E31$	$E32$	$E33$	$E34$	$E35$	$E36$	$E37$	$E38$	$E39$	$E40$	$E41$	Inc
$F1$	120	120	102	120	102	108	51	60	19	216	57	204	204	114	114	102	204	192	192	96	4001
$F2$	108	108	108	126	108	90	54	63	21	180	45	216	216	108	108	108	180	180	180	90	3939