The Cone MET6

13th January 2002

1 The intrisic informations concerning the graph of extreme rays of MET6.ext

The graph considered is made of 296 elements.
The group acting on MET6.ext is ReprS6
Under the group action we have in fact only 8 orbits to consider.
The diameter of the graph is 2.
The list of orbits is with adjacency and Size info:

E1:	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1	190	6
E2:	0	0	0	1	1	0	0	1	1	0	1	1	1	1	0	158	15
E3:	0	0	1	1	1	0	1	1	1	1	1	1	0	0	0	156	10
E4:	1	1	1	2	2	2	2	1	1	2	1	1	1	1	2	57	10
E5:	0	1	1	1	2	1	1	1	2	2	2	1	2	1	1	34	60
E6:	1	1	1	1	2	2	2	2	1	2	2	1	2	1	1	32	15
E7:	0	1	1	2	2	1	1	2	2	2	1	1	1	1	2	30	90
E8:	1	1	1	2	2	2	2	1	1	2	1	1	1	3	2	23	90

The representation matrix is:

	E1	E2	E3	E4	E5	E6	E7	E8	Adj.	Size
E1	5	15	10	10	50	10	60	30	190	6
E2	6	14	10	6	36	8	30	48	158	15
E3	6	15	9	9	18	9	54	36	156	10
E4	6	9	9	0	6	0	18	9	57	10
E5	5	9	3	1	2	2	6	6	34	60
E6	4	8	6	0	8	0	6	0	32	15
E7	4	5	6	2	4	1	4	4	30	90
E8	2	8	4	1	4	0	4	0	23	90
Size	6	15	10	10	60	15	90	90		296

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 6.
2. Norm of elements is 5.
3. Possible scalar product : 1

Considering Orbit 2

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

Considering Orbit 3

1. Orbit Size is 10.
2. Norm of elements is 9.
3. Possible scalar product : 5

Considering Orbit 4

1. Orbit Size is 10.
2. Norm of elements is 33.
3. Possible scalar product : 29

Considering Orbit 5

1. Orbit Size is 60.
2. Norm of elements is 29.
3. Possible scalar product : 21, 23, 25

Considering Orbit 6

1. Orbit Size is 15.
2. Norm of elements is 36.
3. Possible scalar product : 32

Considering Orbit 7

1. Orbit Size is 90.
2. Norm of elements is 32.
3. Possible scalar product : 24, 26, 28

Considering Orbit 8

1. Orbit Size is 90.
2. Norm of elements is 41.
3. Possible scalar product : 33, 35, 37

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 120.

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

1. Group Size is 72.

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

Invariant group of Orbit 4:

1. Group Size is 72.

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

), (2 5 6 1 4 3), (3 5 6 1 2 4), (2 5 6 1 3 4), (4 1 6 5 3 2), (4 1 6 5 2 3), (3 1 6 5 4 2), (2 1 6 5 4 3), (3 1 6 5 2 4), (2 1 6 5 3 4), (4 5 1 6 3 2), (4 5 1 6 2 3), (3 5 1 6 4 2), (2 5 1 6 4 3), (3 5 1 6 2 4), (2 5 1 6 3 4), (4 1 5 6 3 2), (4 1 5 6 2 3), (3 1 5 6 4 2), (2 1 5 6 4 3), (3 1 5 6 2 4), (2 1 5 6 3 4), (5 4 3 2 6 1), (5 4 2 3 6 1), (5 3 4 2 6 1), (5 2 4 3 6 1), (5 3 2 4 6 1), (5 2 3 4 6 1), (1 4 3 2 6 5), (1 4 2 3 6 5), (1 3 4 2 6 5), (1 2 4 3 6 5), (1 3 2 4 6 5), (1 2 3 4 6 5), (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 5:

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 6:

1. Group Size is 48.
2. Elements are : (6 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 4 5 3 2 1), (6 4 5 2 3 1), (6 3 5 4 2 1), (6 2 5 4 3 1), (6 3 5 2 4 1), (6 2 5 3 4 1), (6 4 3 5 2 1), (6 4 2 5 3 1), (6 3 4 5 2 1), (6 2 4 5 3 1), (6 3 2 5 4 1), (6 2 3 5 4 1), (6 4 3 2 5 1), (6 4 2 3 5 1), (6 3 4 2 5 1), (6 2 4 3 5 1), (6 3 2 4 5 1), (6 2 3 4 5 1), (1 5 4 3 2 6), (1 5 4 2 3 6), (1 5 3 4 2 6), (1 5 2 4 3 6), (1 5 3 2 4 6), (1 5 2 3 4 6), (1 4 5 3 2 6), (1 4 5 2 3 6), (1 3 5 4 2 6), (1 2 5 4 3 6), (1 3 5 2 4 6), (1 2 5 3 4 6), (1 4 3 5 2 6), (1 4 2 5 3 6), (1 3 4 5 2 6), (1 2 4 5 3 6), (1 3 2 5 4 6), (1 2 3 5 4 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 7:

1. Group Size is 8.
2. Elements are : (2 1 4 3 6 5), (1 2 4 3 6 5), (2 1 3 4 6 5), (1 2 3 4 6 5), (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 8:

1. Group Size is 8.
2. Elements are : (3 5 1 6 2 4), (2 5 1 6 3 4), (3 1 5 6 2 4), (2 1 5 6 3 4), (5 3 2 4 1 6), (5 2 3 4 1 6), (1 3 2 4 5 6), (1 2 3 4 5 6)

2 The intrisic informations concerning the graph of facet rays of MET6.ine

The graph considered is made of 60 elements.
The group acting on MET6.ine is ReprS6
Under the group action we have in fact only 1 orbits to consider.
The diameter of the graph is 2.
The list of orbits is with adjacency and Size info:

F1: -1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 | 45 | 60

The representation matrix is:

	F1	Adj.	Size
F1	45	45	60
Size	60		60

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 3.
3. Possible scalar product : -1, 0, 1

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 : (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)

3 The two incidence matrix

Incidence between Orbit of Extreme rays and Orbits of Facets

	$F1$	Inc
$E1$	50	50
$E2$	44	44
$E3$	42	42
$E4$	18	18
$E5$	23	23
$E6$	16	16
$E7$	22	22
$E8$	18	18

Incidence between Orbits of Facets and Orbits of Extreme Rays

	$E1$	$E2$	$E3$	$E4$	$E5$	$E6$	$E7$	$E8$	Inc
$F1$	5	11	7	3	23	4	33	27	113