The Cone 2-P5

13th January 2002

1 The intrisic informations concerning the graph of extreme rays of 2-P5.ext

The graph considered is made of 25 elements.
The group acting on 2-P5.ext is Group2hmet5
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:

E1:	0	0	0	0	1	1	0	1	1	0	22	15
E2:	0	0	0	0	0	1	0	0	1	1	21	10

The representation matrix is:

	E1	E2	Adj.	Size
E1	14	8	22	15
E2	12	9	21	10
Size	15	10		25

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 : 1, 2

Considering Orbit 2

1. Orbit Size is 10.
2. Norm of elements is 3.
3. Possible scalar product : 0, 1

1.2 invariant group of Orbits

The invariant group of x is the set of g such that g(x)=x denoted b G_x.
If x and y are in the same orbit then the groups G_x and G_x are conjuguate.
Invariant group of Orbit 1

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

Invariant group of Orbit 2

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

2 The intrisic informations concerning the graph of facet rays of 2-P5.ine

The graph considered is made of 120 elements.
The group acting on 2-P5.ine is Group2hmet5
Under the group action we have in fact only 4 orbits to consider.
The diameter of the graph is 3.
The list of orbits is with adjacency and Size info:

F1:	-1	0	1	0	1	0	0	1	0	0	49	20
F2:	0	0	0	0	0	0	0	0	0	1	42	10
F3:	-1	0	1	1	0	1	1	2	-1	0	15	60
F4:	-1	-1	2	2	1	1	2	1	1	-2	9	30

The representation matrix is:

	F1	F2	F3	F4	Adj.	Size
F1	16	9	18	6	49	20
F2	18	3	18	3	42	10
F3	6	3	4	2	15	60
F4	4	1	4	0	9	30
Size	20	10	60	30		120

2.1 The local graphs

The complemented local graph are:
We consider graph with cardinal inferior or equal to 20

The complemented local graph for orbit 3 is:

1	8	:	4 5 6 7 8 9 10 14
2	5	:	4 5 6 10 14
3	2	:	7 8
4	8	:	1 2 7 8 10 11 13 15
5	4	:	1 2 7 13
6	4	:	1 2 8 11
7	7	:	1 3 4 5 11 12 14
8	7	:	1 3 4 6 12 13 15
9	5	:	1 10 11 13 15
10	4	:	1 2 4 9
11	4	:	4 6 7 9
12	2	:	7 8
13	4	:	4 5 8 9
14	3	:	1 2 7
15	3	:	4 8 9

The complemented local graph for orbit 4 is:

1	0	:	
2	0	:	
3	2	:	4 6
4	2	:	3 5
5	2	:	4 6
6	2	:	3 5
7	0	:	
8	0	:	
9	0	:	

2.2 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 20.
2. Norm of elements is 4.
3. Possible scalar product : $-1, 0, 1$

Considering Orbit 2

1. Orbit Size is 10.
2. Norm of elements is 1.
3. Possible scalar product : 0

Considering Orbit 3

1. Orbit Size is 60.
2. Norm of elements is 10.
3. Possible scalar product : $-5, -4, -2, -1, 0, 2, 3, 4, 7, 8$

Considering Orbit 4

1. Orbit Size is 30.
2. Norm of elements is 22.
3. Possible scalar product : -12, -5, -2, 3, 4, 8, 11, 15

2.3 invariant group of Orbits

The invariant group of x is the set of g such that g(x)=x denoted b G_x.
If x and y are in the same orbit then the groups G_x and G_x are conjuguate.
Invariant group of Orbit 1

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

Invariant group of Orbit 2

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

Invariant group of Orbit 3

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

Invariant group of Orbit 4

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

3 The two incidence matrix

Incidence between Orbit of Extreme rays and Orbits of Facets

	$F1$	$F2$	$F3$	$F4$	Inc
$E1$	12	6	24	12	54
$E2$	14	7	24	9	54

Incidence between Orbits of Facets and Orbits of Extreme Rays

	$E1$	$E2$	Inc
$F1$	9	7	16
$F2$	9	7	16
$F3$	6	4	10
$F4$	6	3	9