

# q=3 non iso

The following is to be run in gap and is used to construct the intersection matrices under the orbit of the stabilizer. We then take the intersection matrices and place them in the next file to find possible fusion schemes.

```
g := SP(6,2) ##Construct the symplectic group, v=3,q=2
```

```
Sp(6,2)
```

```
D := Subspaces(GF(2)^6,3) ##Find all subspaces of Dimension 3 over GF(2)^6
```

```
Subspaces( ( GF(2)^6 ), 3 )
```

```
iter := Iterator(D);; ## This creates the generator as a list would be too large
```

```
m := NextIterator(iter); ##Gets the next vectorspace Print(m) will show you the vectorspace
```

```
<vector space of dimension 3 over GF(2)>
```

```
S := Stabilizer(g,m,OnPoints) ##Finds the stabilizer of the subspace m in the symplectic vectorspace.
```

```
<matrix group of size 10752 with 5 generators>
```

```
F := Orbits(S,D,OnPoints);; ## Generates the orbits of the stabilizer on all subspaces D
```

```
for i in F
do Print(Size(i),' ');
od;
##We now print out the different orbit sizes. These can be calculated using the formulas available in the other file. We can select any of the sizes. Indexing starts at 1 in gap.
```

```
64' '56' '672' '448' '14' '84' '56' '1' '
```

```
Size(F[4])
```

```
448
```

```
temp1 := F[4];;
```

```
FF:=[ ]
```

```
[ ]
```

```
FF1:=[ ]
```

```
[ ]
```

```
FF2:=[ ]
```

```
[ ]
```

```
OrbitSize:=[ ]
```

```
[ ]
```

```

for i in temp1
do Add(FF,[i,i]);
od;

```

```

for i in temp1
do Add(FF2,[i,i]);
od;

```

```
Size(temp1)^2
```

200704

```

for i in [1..Size(temp1)]
do for j in [1..Size(temp1)]
do if not [temp1[i],temp1[j]] in FF
then Test1 :=Orbit(S,[temp1[i],temp1[j]],OnPairs);
Add(OrbitSize,Size(Test1));
Add(FF1,Test1);
for k in Test1
do Add(FF,k);
od;
fi;
od;
od;

```

```
OrbitSize
```

```

[ 5376, 2688, 2688, 1344, 5376, 5376, 10752, 10752, 5376, 10752,
10752, 5376,
10752, 10752, 5376, 10752, 10752, 5376, 10752, 10752, 10752, 5376,
5376,
1792, 10752, 5376, 1792, 5376, 1344, 448 ]

```

```
Add(FF1,FF2,1)
```

```

pijh:=function(i,j,h,f,temp1)
local count1,test1,test2,pair1,x1,y1;
count1:=0;
test1:=f;
test2:=temp1;
pair1:=test1[h][1];
x1:=pair1[1];
y1:=pair1[2];
for tempvall in temp1 do
if [x1,tempvall] in test1[i] then
if [y1,tempvall] in test1[j] then
count1:=count1+1;
fi;
fi;
od;

```



```

[ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 12, 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, 24, 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, 24, 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, 12, 0, 0, 0, 0, 0,
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[ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 24, 0, 0, 0, 0,
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[ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 12, 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, 24, 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, 24,
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    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,
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    0, 0, 0, 0, 0, 0, 0, 0 ],
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0, 12, 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, 12,
    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,
    4, 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,
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    0, 24, 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, 12, 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, 4, 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,
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    0, 0, 0, 0, 12, 0, 0, 0 ],
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    0, 0, 0, 0, 0, 0, 0, 0 ],
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    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,
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    0, 0, 0, 0, 0, 0, 0, 0 ],
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    0, 0, 0, 0, 0, 0, 3, 0 ],
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[ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 24, 0, 0, 0, 0, 0, 0, 0, 0, 0,
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    0, 0, 0, 0, 0, 0, 0, 0 ],
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    0, 0, 0, 0, 0, 0, 0, 0 ],
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    0, 0, 0, 0, 0, 0, 0, 0 ],
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    0, 0, 0, 0, 0, 0, 0, 0 ],
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    0, 24, 0, 0, 0, 0, 0, 0 ],
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    0, 0, 0, 0, 0, 0, 0, 0 ],
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  0, 0, 0, 0, 0, 0, 0 ],
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  0, 0, 0, 0, 0, 0, 0 ],
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  0, 0, 0, 4, 0, 0, 0 ],
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  4, 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, 12, 0, 0,
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  0, 0, 0, 0, 0, 0, 0 ],
[ 0, 0, 0, 0, 3, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
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  0, 0, 0, 0, 0, 0, 0 ],
[ 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
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  0, 0, 0, 0, 0, 0, 0 ] ],

```

[full\\_output.txt](#)