■ Compute B matrix

In[1]:=
```
SetDirectory["/www/user/fdahl/papers/Conjugation/"];
<< kappaLib.m
```

```
KappaLib v1.1
```

In[3]:=
```
B = Table[Signature[{emOrd[i][[1]], emOrd[i][[2]], emOrd[j][[1]], emOrd[j][[2]]}],
    {i, 1, 6}, {j, 1, 6}];
```

In[4]:=
```
B // MatrixForm
```

Out[4]//MatrixForm=

$$\begin{pmatrix} 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \end{pmatrix}$$

Out[4]//MatrixForm=

$$\begin{pmatrix} 0 & -1 & -1 & -1 & -1 & -1 \\ -1 & 0 & -1 & -1 & -1 & -1 \\ -1 & -1 & 0 & -1 & -1 & -1 \\ -1 & -1 & -1 & 0 & -1 & -1 \\ -1 & -1 & -1 & -1 & 0 & -1 \\ -1 & -1 & -1 & -1 & -1 & 0 \end{pmatrix}$$

$$\begin{pmatrix} 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \end{pmatrix}$$

In[5]:=
```
Det[B]
```

Out[5]=
```
-1
```

■ In the proof of Theorem 3.2 we need to know that the spectrum of all F_i matrices are contained in {+1, -1}.

In[6]:=
```
Eigenvalues[{{0, 1}, {1, 0}}]
```

Out[6]=
```
{-1, 1}
```

In[7]:=
```
Eigenvalues[{{0, 0, 1}, {0, 1, 0}, {1, 0, 0}}]
```

Out[7]=
```
{-1, 1, 1}
```

In[8]:=
```
Eigenvalues[{{0, 0, 0, 1}, {0, 0, 1, 0}, {0, 1, 0, 0}, {1, 0, 0, 0}}]
```

Out[8]=
```
{-1, -1, 1, 1}
```

In[9]:=
```
Eigenvalues[{{0, 0, 0, 0, 1}, {0, 0, 0, 1, 0}, {0, 0, 1, 0, 0}, {0, 1, 0, 0, 0}, {1, 0, 0, 0, 0}}]
```

Out[9]=
```
{-1, -1, 1, 1, 1}
```

In[10]:=
```
Eigenvalues[{{0, 0, 0, 0, 0, 1}, {0, 0, 0, 0, 1, 0},
  {0, 0, 0, 1, 0, 0}, {0, 0, 1, 0, 0, 0}, {0, 1, 0, 0, 0, 0}, {1, 0, 0, 0, 0, 0}}]
```

Out[10]=
```
{-1, -1, -1, 1, 1, 1}
```

■ Write .pdf file

In[11]:=
```
NotebookPrint[SelectedNotebook[],
 "/www/user/fdahl/papers/Conjugation/notebooks/computeBMatrix.pdf"]
```