In[3]:=
```
SetDirectory["/www/user/fdahl/papers/Conjugation/"];
<< kappaLib.m
```

```
KappaLib v1.1
```

In[5]:=
```
Table[emOrd[i], {i, 1, 6}]
```

Out[5]=
```
{{1, 2}, {1, 3}, {1, 4}, {3, 4}, {4, 2}, {2, 3}}
```

## ■ Hodge of Euclidean metric (++++)

In[6]:=
```
metric = DiagonalMatrix[{1, 1, 1, 1}];
kappa = emHodge[metric];
matrix = emKappaToMatrix[kappa];
matrix // MatrixForm
Eigenvalues[matrix]
```

Out[9]//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[10]=
```
{-1, -1, -1, 1, 1, 1}
```

## ■ Hodge of Lorentz metric (-+++)

In[11]:=
```
metric = DiagonalMatrix[{-1, 1, 1, 1}];
kappa = emHodge[metric];
matrix = emKappaToMatrix[kappa];
matrix // MatrixForm
Eigenvalues[matrix]
```

Out[14]//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[15]=
```
{i, i, i, -i, -i, -i}
```

## ■ Hodge of indefinite metric (--++)

In[16]:=
```
metric = DiagonalMatrix[{-1, -1, 1, 1}];
kappa = emHodge[metric];
matrix = emKappaToMatrix[kappa];
matrix // MatrixForm
Eigenvalues[matrix]
```

Out[19]//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[20]= {-1, -1, -1, 1, 1, 1}

## ■ Hodge of indefinite metric (+--+)

In[21]:=
```
metric = DiagonalMatrix[{1, -1, -1, 1}];
kappa = emHodge[metric];
matrix = emKappaToMatrix[kappa];
matrix // MatrixForm
Eigenvalues[matrix]
```

Out[24]//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[25]= {-1, -1, -1, 1, 1, 1}

## ■ 6x6 matrix in Appendix A

In[26]:=
```
m = {{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}};
```

In[27]:=
```
Eigenvalues[m]
```

Out[27]= {-1, -1, -1, 1, 1, 1}