

■ Coordinate conjugations for Metaclass III

```
In[1]:= SetDirectory["~/writing/WIP/Conjugation/"];
<< kappaLib.m
```

KappaLib v1.1

```
In[3]:= mat1 = 
$$\begin{pmatrix} a1 & -b1 & 0 & 0 & 0 & 0 \\ b1 & a1 & 0 & 0 & 0 & 0 \\ 1 & 0 & a1 & 0 & 0 & -b1 \\ 0 & 0 & 0 & a1 & b1 & 1 \\ 0 & 0 & 1 & -b1 & a1 & 0 \\ 0 & 1 & b1 & 0 & 0 & a1 \end{pmatrix};$$

```

```
H2 = 
$$\begin{pmatrix} 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \end{pmatrix};$$

```

```
H3 = 
$$\begin{pmatrix} 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & -1 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 & 0 & 0 \end{pmatrix};$$

```

```
kappa1 = emMatrixToKappa[mat1];
kappa2 = emMatrixToKappa[H2.mat1.H2];
kappa3 = emMatrixToKappa[H3.mat1.H3];
```

■ For this metaclass the two conjugations do not give the same result

```
In[9]:= Union[Flatten[kappa2 - kappa3]]
```

```
Out[9]= {-2, 0, 2}
```

■ Conjugation by H2:

```
In[10]:= L = 
$$\begin{pmatrix} 0 & 0 & 0 & -1 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ -1 & 0 & 0 & 0 \end{pmatrix};$$

```

```
kappa2a = emCoordinateChange[kappa2, L];
Union[Flatten[kappa1 - kappa2a]]
```

```
Out[12]= {0}
```

■ **Conjugation by H3:**

$$\text{In[13]:= } \mathbf{L} = \begin{pmatrix} 0 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 0 \end{pmatrix};$$

```
kappa3a = emCoordinateChange[kappa3, L];  
Union[Flatten[kappa1 - kappa3a]]
```

Out[15]= {0}