

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

KappaLib v1.1

Petrov routine loaded

■ Class III: (3bar(3))

$$\text{In[4]:= } \mathbf{B} = \begin{pmatrix} 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \end{pmatrix};$$

$$\text{In[5]:= } \mathbf{V} = \begin{pmatrix} \text{sigma1} & \text{taul} & 1 & 0 & 0 & 0 \\ -\text{taul} & \text{sigma1} & 0 & 1 & 0 & 0 \\ 0 & 0 & \text{sigma1} & \text{taul} & 1 & 0 \\ 0 & 0 & -\text{taul} & \text{sigma1} & 0 & 1 \\ 0 & 0 & 0 & 0 & \text{sigma1} & \text{taul} \\ 0 & 0 & 0 & 0 & -\text{taul} & \text{sigma1} \end{pmatrix};$$

```
In[6]:= Eigenvalues[V]
```

```
Out[6]= {sigma1 - i taul, sigma1 - i taul, sigma1 - i taul,
sigma1 + i taul, sigma1 + i taul, sigma1 + i taul}
```

$$\text{In[7]:= } \mathbf{W} = \begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 & 0 \end{pmatrix};$$

```
In[8]:= Eigenvalues[W]
```

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

```
In[9]:= (* Found with FindSPermutations.m: permutation 6,6 with leading B *)
```

$$\mathbf{S} = \begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \end{pmatrix};$$

■ Check that S is in set mathcal(S)

```
In[10]:= Transpose[S].B.S == W
```

```
Out[10]= True
```

■ Compute result

```
In[11]:= res = S.V.Inverse[S];
res // MatrixForm
```

Out[12]/MatrixForm=

$$\begin{pmatrix} \text{sigma1} & -\text{tau1} & 0 & 0 & 0 & 0 \\ \text{tau1} & \text{sigma1} & 0 & 0 & 0 & 0 \\ 1 & 0 & \text{sigma1} & 0 & 0 & -\text{tau1} \\ 0 & 0 & 0 & \text{sigma1} & \text{tau1} & 1 \\ 0 & 0 & 1 & -\text{tau1} & \text{sigma1} & 0 \\ 0 & 1 & \text{tau1} & 0 & 0 & \text{sigma1} \end{pmatrix}$$

```
In[13]:= Petrov[res]
```

Out[13]/MatrixForm=

$$\begin{pmatrix} 0 & 0 & 0 & 0 & -\text{tau1} & \text{sigma1} \\ 0 & 0 & 0 & 0 & \text{sigma1} & \text{tau1} \\ 0 & 0 & -\text{tau1} & \text{sigma1} & 0 & 1 \\ 0 & 0 & \text{sigma1} & \text{tau1} & 1 & 0 \\ -\text{tau1} & \text{sigma1} & 0 & 1 & 0 & 0 \\ \text{sigma1} & \text{tau1} & 1 & 0 & 0 & 0 \end{pmatrix}$$

■ Export notebook as .pdf

```
In[14]:= NotebookPrint[SelectedNotebook[],
"/www/user/fdahl/papers/Conjugation/notebooks/ClassIII.pdf"]
```