

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

KappaLib v1.1

Petrov routine loaded

■ Class XII: (2 2 bar(2))

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

$$\text{In[5]:= } \mathbf{V} = \begin{pmatrix} \text{lam1} & 1 & 0 & 0 & 0 & 0 \\ 0 & \text{lam1} & 0 & 0 & 0 & 0 \\ 0 & 0 & \text{sigma1} & \text{tau1} & 1 & 0 \\ 0 & 0 & -\text{tau1} & \text{sigma1} & 0 & 1 \\ 0 & 0 & 0 & 0 & \text{sigma1} & \text{tau1} \\ 0 & 0 & 0 & 0 & -\text{tau1} & \text{sigma1} \end{pmatrix};$$

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

```
Out[6]= {lam1, lam1, sigma1 - i tau1, sigma1 - i tau1, sigma1 + i tau1, sigma1 + i tau1}
```

$$\text{In[7]:= } \mathbf{W} = \begin{pmatrix} 0 & \text{eps1} & 0 & 0 & 0 & 0 \\ \text{eps1} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \end{pmatrix};$$

■ eps1 can be +1/-1:

```
In[8]:= Sort[Eigenvalues[W] /. {eps1 -> 1}]
Sort[Eigenvalues[W] /. {eps1 -> -1}]
```

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

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

$$\text{In[10]:= } \mathbf{S} = \begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ \text{eps1} & 0 & 0 & 0 & 0 & 0 \end{pmatrix};$$

■ Check that S is in set mathcal(S)

```
In[11]:= Transpose[S].B.S == W
```

```
Out[11]= True
```

Compute result

```
In[12]:= res = S.V.Inverse[S];  
res // MatrixForm
```

```
Out[13]//MatrixForm=
```

$$\begin{pmatrix} \text{sigma1} & -\text{taul} & 0 & 0 & 0 & 0 \\ \text{taul} & \text{sigma1} & 0 & 0 & 0 & 0 \\ 0 & 0 & \text{laml} & 0 & 0 & 0 \\ 0 & 1 & 0 & \text{sigma1} & \text{taul} & 0 \\ 1 & 0 & 0 & -\text{taul} & \text{sigma1} & 0 \\ 0 & 0 & \text{eps1} & 0 & 0 & \text{laml} \end{pmatrix}$$

```
In[14]:= Petrov[res]
```

```
Out[14]//MatrixForm=
```

$$\begin{pmatrix} 0 & 0 & 0 & 0 & -\text{taul} & \text{sigma1} \\ 0 & 0 & 0 & 0 & \text{sigma1} & \text{taul} \\ 0 & 0 & 0 & \text{laml} & 0 & 0 \\ 0 & 0 & \text{laml} & \text{eps1} & 0 & 0 \\ -\text{taul} & \text{sigma1} & 0 & 0 & 0 & 1 \\ \text{sigma1} & \text{taul} & 0 & 0 & 1 & 0 \end{pmatrix}$$

- **Export notebook as .pdf**

```
In[15]:= NotebookPrint[SelectedNotebook[],  
"/www/user/fdahl/papers/Conjugation/notebooks/ClassXII.pdf"]
```