In[50]:=
```
ClearAll["Global`*"]
(* Matrius components del moment angular en la base de WZ adaptada de Mz*)
```

In[51]:=
```
Lz = {{1, 0, 0, 0, 0, 0}, {0, -1, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0},
   {0, 0, 0, -1, 0, 0}, {0, 0, 0, 0, 1, 0}, {0, 0, 0, 0, 0, 0}};
Lx = 1/Sqrt[2] {{0, 0, 1, 0, 0, 0}, {0, 0, 1, 0, 0, 0}, {1, 1, 0, 0, 0, 0},
   {0, 0, 0, 0, 0, 1}, {0, 0, 0, 0, 0, 1}, {0, 0, 0, 1, 1, 0}};
Ly = i/Sqrt[2] {{0, 0, -1, 0, 0, 0}, {0, 0, 1, 0, 0, 0}, {1, -1, 0, 0, 0, 0},
   {0, 0, 0, 0, 0, 1}, {0, 0, 0, 0, 0, -1}, {0, 0, 0, -1, 1, 0}};
(* Transformació a la base adaptada de
  moment angular (L^2,Lz) de la ZnBl:  |ZnBl> =Mr |WZ> *)
Mr = {{1, 0, 0, 0, 0, 0}, {0, 0, Sqrt[2/3], 0, 1/Sqrt[3], 0}, {0, 1/Sqrt[3], 0, 0, 0, Sqrt[2/3]},
   {0, 0, 0, 1, 0, 0}, {0, 0, 1/Sqrt[3], 0, -Sqrt[2/3], 0}, {0, Sqrt[2/3], 0, 0, 0, -1/Sqrt[3]}} ;
Mr // MatrixForm; Mrinv = Inverse[Mr];
```

(* $T_x = \frac{1}{3\sqrt{2}}\begin{pmatrix} -\sqrt{3} & 0 & 1 & 0 \\ 0 & -1 & 0 & \sqrt{3} \end{pmatrix}$ *)

In[57]:=
```
mat = Mr.Lx.Mrinv 3 Sqrt[2] // Simplify; -Take[mat, {5, 6}, {1, 4}] // MatrixForm
```

Out[57]//MatrixForm=

$$\begin{pmatrix} -\sqrt{3} & 0 & 1 & 0 \\ 0 & -1 & 0 & \sqrt{3} \end{pmatrix}$$

(* $T_y = \frac{-i}{3\sqrt{2}}\begin{pmatrix} \sqrt{3} & 0 & 1 & 0 \\ 0 & 1 & 0 & \sqrt{3} \end{pmatrix}$ *)

In[59]:=
```
mat = Mr.Ly.Mrinv 3 Sqrt[2] i // Simplify; -Take[mat, {5, 6}, {1, 4}] // MatrixForm
```

Out[59]//MatrixForm=

$$\begin{pmatrix} \sqrt{3} & 0 & 1 & 0 \\ 0 & 1 & 0 & \sqrt{3} \end{pmatrix}$$

(* $T_z = \frac{\sqrt{2}}{3}\begin{pmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix}$ *)

In[61]:=
```
mat = Mr.Lz.Mrinv 3/Sqrt[2] // Simplify; -Take[mat, {5, 6}, {1, 4}] // MatrixForm
```

Out[61]//MatrixForm=

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

(* $T_{xx} = \frac{1}{3\sqrt{2}}\begin{pmatrix} 0 & -1 & 0 & \sqrt{3} \\ \sqrt{3} & 0 & 1 & 0 \end{pmatrix}$ *)

In[63]:=
```
mat = Mr.Lx.Lx.Mrinv 3 Sqrt[2] // Simplify; -Take[mat, {5, 6}, {1, 4}] // MatrixForm
```

Out[63]//MatrixForm=

$$\begin{pmatrix} 0 & -1 & 0 & \sqrt{3} \\ -\sqrt{3} & 0 & 1 & 0 \end{pmatrix}$$

(* $T_{yy} = \frac{1}{3\sqrt{2}}\begin{pmatrix} 0 & -1 & 0 & -\sqrt{3} \\ \sqrt{3} & 0 & 1 & 0 \end{pmatrix}$ *)

In[64]:=
```
mat = Mr.Ly.Ly.Mrinv 3 Sqrt[2] // Simplify; -Take[mat, {5, 6}, {1, 4}] // MatrixForm
```

Out[64]//MatrixForm=

$$\begin{pmatrix} 0 & -1 & 0 & -\sqrt{3} \\ \sqrt{3} & 0 & 1 & 0 \end{pmatrix}$$

(* $T_{zz} = \frac{\sqrt{2}}{3}\begin{pmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{pmatrix}$ *)

In[66]:=
```
mat = Mr.Lz.Lz.Mrinv 3/Sqrt[2] // Simplify; -Take[mat, {5, 6}, {1, 4}] // MatrixForm
```

Out[66]//MatrixForm=

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

(* $T_{xy} = \frac{i}{\sqrt{6}}\begin{pmatrix} 0 & 0 & 0 & -1 \\ -1 & 0 & 0 & 0 \end{pmatrix}$ *)

In[95]:=
```
mat = 1/2 Mr.(Lx.Ly + Ly.Lx).Mrinv Sqrt[6]/i // Simplify; -Take[mat, {5, 6}, {1, 4}] // MatrixForm
```

Out[95]//MatrixForm=

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

(* $T_{yz} = \frac{i}{2\sqrt{6}}\begin{pmatrix} -1 & 0 & -\sqrt{3} & 0 \\ 0 & \sqrt{3} & 0 & 1 \end{pmatrix}$ *)

In[96]:=
```
mat = 1/2 Mr.(Lx.Lz + Lz.Ly).Mrinv (2 Sqrt[6]/i) // Simplify;
-Take[mat, {5, 6}, {1, 4}] // MatrixForm
```

Out[96]//MatrixForm=

$$\begin{pmatrix} -1 & 0 & -\sqrt{3} & 0 \\ 0 & \sqrt{3} & 0 & 1 \end{pmatrix}$$

$$T_{zx} = \frac{1}{2\sqrt{6}}\begin{pmatrix} -1 & 0 & \sqrt{3} & 0 \\ 0 & \sqrt{3} & 0 & -1 \end{pmatrix}$$

(* *)

In[97]:=
```
mat = 1/2 Mr.(Lz.Lx + Lx.Lz).Mrinv 2 Sqrt[6] // Simplify; -Take[mat, {5, 6}, {1, 4}] // MatrixForm
```

Out[97]//MatrixForm=

$$\begin{pmatrix} -1 & 0 & \sqrt{3} & 0 \\ 0 & \sqrt{3} & 0 & -1 \end{pmatrix}$$