

MPG No. 22.3.81 $\bar{6}'$ [Type III, hexagonal] [T tensor]

* Rank 0 tensor. * Rank 1 tensor.

$$[0 \ 0 \ T_z]$$

$$T_z = T_{pz}^{(1)}$$

* Rank 2 tensor (s). * Rank 2 tensor (a). * Rank 3 tensor (s).

$$\begin{bmatrix} 0 & 0 & T_{xxz} \\ 0 & 0 & T_{xxz} \\ 0 & 0 & T_{zzz} \\ T_{yzx} & T_{zyy} & 0 \\ T_{zyy} & -T_{yzx} & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$T_{xxz} = -T_{faz}^{(1)} + T_{pz}^{(1)}$$

$$T_{zzz} = 2T_{faz}^{(1)} + T_{pz}^{(1)} + 2T_{pz}^{(2)}$$

$$T_{yzx} = -3M_{du}^{(1)}$$

$$T_{zyy} = -T_{faz}^{(1)} + T_{pz}^{(2)}$$

* Rank 3 tensor (a).

$$\begin{bmatrix} T_{yzx} & T_{zyy} & 0 \\ -T_{zyy} & T_{yzx} & 0 \\ 0 & 0 & T_{xyz} \end{bmatrix}$$

$$T_{yzx} = -M_{du}^{(2)} + M_s^{(1)}$$

$$T_{zyy} = T_{pz}^{(3)}$$

$$T_{xyz} = 2M_{du}^{(2)} + M_s^{(1)}$$

* Rank 4 tensor (sss).

$$\begin{bmatrix} 0 & 0 & 0 & T_{xxyz} & T_{xxzx} & 0 \\ 0 & 0 & 0 & -T_{xxyz} & -T_{xxzx} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ T_{xxyz} & -T_{xxyz} & 0 & 0 & 0 & -T_{xxzx} \\ T_{xxzx} & -T_{xxzx} & 0 & 0 & 0 & T_{xxyz} \\ 0 & 0 & 0 & -T_{xxzx} & T_{xxyz} & 0 \end{bmatrix}$$

$$T_{xxyz} = T_{gb}^{(1)}$$

$$T_{xxzx} = T_{ga}^{(1)}$$

* Rank 4 tensor (ssa).

$$\begin{bmatrix} 0 & 0 & 0 & T_{xxyz} & T_{xxzx} & 0 \\ 0 & 0 & 0 & -T_{xxyz} & -T_{xxzx} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ -T_{xxyz} & T_{xxyz} & 0 & 0 & 0 & T_{xxzx} \\ -T_{xxzx} & T_{xxzx} & 0 & 0 & 0 & -T_{xxyz} \\ 0 & 0 & 0 & -T_{xxzx} & T_{xxyz} & 0 \end{bmatrix}$$

$$T_{xxyz} = 2M_{f2}^{(1)}$$

$$T_{xxzx} = -2M_{f1}^{(1)}$$

* Rank 4 tensor (aas). * Rank 4 tensor (aaa). * Rank 4 tensor (sa).

$$\begin{bmatrix} T_{xxyz} & T_{xxzx} & 0 \\ -T_{xxyz} & -T_{xxzx} & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ T_{xxzx} & -T_{xxyz} & 0 \end{bmatrix}$$

$$T_{xxyz} = M_{f2}^{(2)}$$

$$T_{xxzx} = M_{f1}^{(2)}$$

* Rank 4 tensor (as).

$$\begin{bmatrix} T_{yzxx} & -T_{yxxx} & 0 & 0 & 0 & T_{yzxy} \\ T_{yzxy} & -T_{yzyx} & 0 & 0 & 0 & -T_{yxxx} \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$T_{yzxx} = M_{f2}^{(3)}$$

$$T_{yzxy} = M_{f1}^{(3)}$$

* Rank 4 tensor (s).

$$\begin{bmatrix} 0 & 0 & 0 & T_{xxyz} & T_{xxzx} & 0 & T_{xxzy} & T_{xxxz} & 0 \\ 0 & 0 & 0 & -T_{xxyz} & -T_{xxzx} & 0 & -T_{xxzy} & -T_{xxxz} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ T_{yzxx} & -T_{yxxx} & 0 & 0 & 0 & T_{yzxy} & 0 & 0 & T_{yzxy} \\ -T_{yzxy} & T_{yzyx} & 0 & 0 & 0 & T_{yxxx} & 0 & 0 & T_{yxxx} \\ 0 & 0 & 0 & -T_{xxzx} & T_{xxzy} & 0 & -T_{xxzx} & T_{xxyz} & 0 \end{bmatrix}$$

$$T_{xxyz} = 2M_{f2}^{(1)} + M_{f2}^{(2)} + T_{gb}^{(1)}$$

$$T_{xxzx} = -2M_{f1}^{(1)} + M_{f1}^{(2)} + T_{ga}^{(1)}$$

$$T_{xxzy} = 2M_{f2}^{(1)} - M_{f2}^{(2)} + T_{gb}^{(1)}$$

$$T_{xxxz} = -2M_{f1}^{(1)} - M_{f1}^{(2)} + T_{ga}^{(1)}$$

$$T_{yzxx} = -2M_{f2}^{(1)} + T_{gb}^{(1)}$$

$$T_{yzxy} = -2M_{f1}^{(1)} - T_{ga}^{(1)}$$

* Rank 4 tensor (a).

$$\begin{bmatrix} T_{yzxx} & -T_{yxxx} & 0 & 0 & 0 & T_{yzxy} & 0 & 0 & T_{yzxy} \\ T_{yzxy} & -T_{yzyx} & 0 & 0 & 0 & -T_{yxxx} & 0 & 0 & -T_{yxxx} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$T_{yzxx} = M_{f2}^{(3)}$$

$$T_{yzxy} = M_{f1}^{(3)}$$

* Rank 4 tensor (t).

$$\begin{bmatrix} 0 & 0 & T_{xxxz} \\ 0 & 0 & T_{yyyz} \\ 0 & 0 & 0 \\ -T_{xxzx} & T_{yyyz} & 0 \\ 0 & 0 & 0 \\ 0 & 0 & -T_{yyyz} \\ 0 & 0 & 0 \\ T_{xxzx} & -T_{yyyz} & 0 \\ 0 & 0 & -T_{xxzx} \\ -T_{yyyz} & -T_{xxzx} & 0 \end{bmatrix}$$

$$T_{xxxz}=T^{(1)}_{ga}$$

$$T_{yyyz}=-T^{(1)}_{gb}$$