MPG No. 18.3.67 32′ (32'1 setting) [Type III, trigonal] [T tensor]

* Rank 0 tensor. * Rank 1 tensor.

$$\begin{bmatrix} 0 & 0 & T_z \end{bmatrix}$$

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

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

$$\begin{bmatrix} 0 & T_{xy} & 0 \\ -T_{xy} & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$T_{xy} = M_{pz}^{(1)}$$

* Rank 3 tensor (s).

$$\begin{bmatrix} 0 & T_{xxy} & T_{xxz} \\ 0 & -T_{xxy} & T_{xxz} \\ 0 & 0 & T_{zzz} \\ 0 & T_{yzy} & 0 \\ T_{yzy} & 0 & 0 \\ T_{xxy} & 0 & 0 \end{bmatrix}$$

$$T_{xxy} = T_{f1}^{(1)}$$
$$T_{xxz} = -T_{faz}^{(1)} + T_{pz}^{(1)}$$
$$T_{zzz} = 2T_{faz}^{(1)} + T_{pz}^{(1)} + 2T_{pz}^{(2)}$$
$$T_{yzy} = -T_{faz}^{(1)} + T_{pz}^{(2)}$$

* Rank 3 tensor (a).

$$\begin{bmatrix} 0 & T_{yzy} & 0 \\ -T_{yzy} & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

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

* Rank 4 tensor (sss).

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

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

* Rank 4 tensor (ssa).

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

$$T_{xxzx} = -2M_{f1}^{(1)}$$
$$T_{xxxy} = -2M_{faz}^{(1)} + 2M_{pz}^{(1)}$$
$$T_{yzzx} = -4M_{faz}^{(1)} - M_{pz}^{(1)}$$

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

$$\begin{bmatrix} 0 & T_{yzzx} & 0 \\ -T_{yzzx} & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$T_{yzzx} = -M_{pz}^{(2)}$$

* Rank 4 tensor (sa).

$$\begin{bmatrix} 0 & T_{xxzx} & T_{xxxy} \\ 0 & -T_{xxzx} & T_{xxxy} \\ 0 & 0 & T_{zzxy} \\ 0 & T_{yzzx} & 0 \\ T_{yzzx} & 0 & 0 \\ T_{xxzx} & 0 & 0 \end{bmatrix}$$

$$T_{xxzx} = M_{f1}^{(2)}$$
$$T_{xxxy} = -M_{faz}^{(2)} + M_{pz}^{(3)}$$
$$T_{zzxy} = 2M_{faz}^{(2)} + M_{pz}^{(3)} + 2M_{pz}^{(4)}$$
$$T_{yzzx} = -M_{faz}^{(2)} + M_{pz}^{(4)}$$

* Rank 4 tensor (as).

$$\begin{bmatrix} 0 & 0 & 0 & 0 & T_{yzzx} & T_{yzxy} \\ T_{yzxy} & -T_{yzxy} & 0 & T_{yzzx} & 0 & 0 \\ T_{xyxx} & T_{xyxx} & T_{xyzz} & 0 & 0 & 0 \end{bmatrix}$$

$$T_{yzzx} = -M_{faz}^{(3)} + M_{pz}^{(6)}$$
$$T_{yzxy} = M_{f1}^{(3)}$$
$$T_{xyxx} = -M_{faz}^{(3)} + M_{pz}^{(5)}$$
$$T_{xyzz} = 2M_{faz}^{(3)} + M_{pz}^{(5)} + 2M_{pz}^{(6)}$$

* Rank 4 tensor (s).

$$\begin{bmatrix} 0 & 0 & 0 & 0 & T_{xxzx} & T_{xxxy} & 0 & T_{xxxz} & T_{xxyx} \\ 0 & 0 & 0 & 0 & -T_{xxzx} & -T_{xxyx} & 0 & -T_{xxxz} & -T_{xxxy} \\ 0 & 0 & 0 & 0 & 0 & T_{zzxy} & 0 & 0 & -T_{zzxy} \\ 0 & 0 & 0 & 0 & T_{yzzx} & T_{yzxy} & 0 & T_{yzxz} & T_{yzxy} \\ -T_{yzxy} & T_{yzxy} & 0 & -T_{yzxz} & 0 & 0 & -T_{yzzx} & 0 & 0 \\ -\frac{T_{xxxy}}{2} - \frac{T_{xxyx}}{2} & \frac{T_{xxxy}}{2} + \frac{T_{xxyx}}{2} & 0 & -T_{xxxz} & 0 & 0 & -T_{xxzx} & 0 & 0 \end{bmatrix}$$

$$T_{xxzx} = -2M_{f1}^{(1)} + M_{f1}^{(2)} + T_{ga}^{(1)}$$
$$T_{xxxy} = -2M_{faz}^{(1)} - M_{faz}^{(2)} + 2M_{pz}^{(1)} + M_{pz}^{(3)}$$
$$T_{xxxz} = -2M_{f1}^{(1)} - M_{f1}^{(2)} + T_{ga}^{(1)}$$
$$T_{xxyx} = -2M_{faz}^{(1)} + M_{faz}^{(2)} + 2M_{pz}^{(1)} - M_{pz}^{(3)}$$
$$T_{zzxy} = 2M_{faz}^{(2)} + M_{pz}^{(3)} + 2M_{pz}^{(4)}$$
$$T_{yzzx} = -4M_{faz}^{(1)} - M_{faz}^{(2)} - M_{pz}^{(1)} + M_{pz}^{(4)}$$
$$T_{yzxy} = -2M_{f1}^{(1)} - T_{ga}^{(1)}$$
$$T_{yzxz} = -4M_{faz}^{(1)} + M_{faz}^{(2)} - M_{pz}^{(1)} - M_{pz}^{(4)}$$

* Rank 4 tensor (a).

$$\begin{bmatrix} 0 & 0 & 0 & 0 & T_{yzzx} & T_{yzxy} & 0 & T_{yzxz} & T_{yzxy} \\ T_{yzxy} & -T_{yzxy} & 0 & T_{yzxz} & 0 & 0 & T_{yzzx} & 0 & 0 \\ T_{xyxx} & T_{xyxx} & T_{xyzz} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$T_{yzzx} = -M^{(3)}_{faz} - M^{(2)}_{pz} + M^{(6)}_{pz}$$
$$T_{yzxy} = M^{(3)}_{f1}$$
$$T_{yzxz} = -M^{(3)}_{faz} + M^{(2)}_{pz} + M^{(6)}_{pz}$$
$$T_{xyxx} = -M^{(3)}_{faz} + M^{(5)}_{pz}$$
$$T_{xyzz} = 2M^{(3)}_{faz} + M^{(5)}_{pz} + 2M^{(6)}_{pz}$$

* Rank 4 tensor (t).

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

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