

\* Rank 0 tensor.

$$[T]$$

$$T = T_s^{(1)}$$

\* Rank 1 tensor.

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

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

\* Rank 2 tensor (s).

$$\begin{bmatrix} T_{xx} & 0 & 0 \\ 0 & T_{yy} & 0 \\ 0 & 0 & T_{zz} \end{bmatrix}$$

$$T_{xx} = -T_{du}^{(1)} + T_{dv}^{(1)} + T_s^{(1)}$$

$$T_{yy} = -T_{du}^{(1)} - T_{dv}^{(1)} + T_s^{(1)}$$

$$T_{zz} = 2T_{du}^{(1)} + T_s^{(1)}$$

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

$$\begin{bmatrix} 0 & 0 & T_{xxz} \\ 0 & 0 & T_{yyz} \\ 0 & 0 & T_{zzz} \\ 0 & T_{yzy} & 0 \\ T_{zxx} & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$T_{xxz} = -2M_{dxy}^{(1)} - T_{faz}^{(1)} + T_{fbz}^{(1)} + T_{pz}^{(1)}$$

$$T_{yyz} = 2M_{dxy}^{(1)} - T_{faz}^{(1)} - T_{fbz}^{(1)} + T_{pz}^{(1)}$$

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

$$T_{yzy} = -M_{dxy}^{(1)} - T_{faz}^{(1)} - T_{fbz}^{(1)} + T_{pz}^{(2)}$$

$$T_{zxx} = M_{dxy}^{(1)} - T_{faz}^{(1)} + T_{fbz}^{(1)} + T_{pz}^{(2)}$$

\* Rank 3 tensor (a).

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

$$T_{yzy} = M_{dxy}^{(2)} + T_{pz}^{(3)}$$

$$T_{zxx} = M_{dxy}^{(2)} - T_{pz}^{(3)}$$

\* Rank 4 tensor (sss).

$$\begin{bmatrix} T_{xxxx} & T_{xxyy} & T_{xxzz} & 0 & 0 & 0 \\ T_{xxyy} & T_{yyyy} & T_{yyzz} & 0 & 0 & 0 \\ T_{xxzz} & T_{yyzz} & T_{zzzz} & 0 & 0 & 0 \\ 0 & 0 & 0 & T_{yzyz} & 0 & 0 \\ 0 & 0 & 0 & 0 & T_{zxzx} & 0 \\ 0 & 0 & 0 & 0 & 0 & T_{xyxy} \end{bmatrix}$$

$$\begin{aligned}
T_{xxxx} &= -2T_{du}^{(1)} - 4T_{du}^{(2)} + 2T_{dv}^{(1)} + 4T_{dv}^{(2)} - T_{gu}^{(1)} + T_{gv}^{(1)} + 2T_g^{(1)} + T_s^{(1)} + 2T_s^{(2)} \\
T_{xyyy} &= -2T_{du}^{(1)} + 2T_{gu}^{(1)} - T_g^{(1)} + T_s^{(1)} \\
T_{xxzz} &= T_{du}^{(1)} + T_{dv}^{(1)} - T_{gu}^{(1)} - T_{gv}^{(1)} - T_g^{(1)} + T_s^{(1)} \\
T_{yyyy} &= -2T_{du}^{(1)} - 4T_{du}^{(2)} - 2T_{dv}^{(1)} - 4T_{dv}^{(2)} - T_{gu}^{(1)} - T_{gv}^{(1)} + 2T_g^{(1)} + T_s^{(1)} + 2T_s^{(2)} \\
T_{yyzz} &= T_{du}^{(1)} - T_{dv}^{(1)} - T_{gu}^{(1)} + T_{gv}^{(1)} - T_g^{(1)} + T_s^{(1)} \\
T_{zzzz} &= 4T_{du}^{(1)} + 8T_{du}^{(2)} + 2T_{gu}^{(1)} + 2T_g^{(1)} + T_s^{(1)} + 2T_s^{(2)} \\
T_{yzyz} &= T_{du}^{(2)} - T_{dv}^{(2)} - T_{gu}^{(1)} + T_{gv}^{(1)} - T_g^{(1)} + T_s^{(2)} \\
T_{zxxz} &= T_{du}^{(2)} + T_{dv}^{(2)} - T_{gu}^{(1)} - T_{gv}^{(1)} - T_g^{(1)} + T_s^{(2)} \\
T_{xyxy} &= -2T_{du}^{(2)} + 2T_{gu}^{(1)} - T_g^{(1)} + T_s^{(2)}
\end{aligned}$$

\* Rank 4 tensor (ssa).

$$\begin{bmatrix}
0 & T_{xyyy} & T_{xxzz} & 0 & 0 & 0 \\
-T_{xyyy} & 0 & T_{yyzz} & 0 & 0 & 0 \\
-T_{xxzz} & -T_{yyzz} & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0
\end{bmatrix}$$

$$\begin{aligned}
T_{xyyy} &= 4M_{f3}^{(1)} - 2T_{dv}^{(3)} \\
T_{xxzz} &= -4M_{f3}^{(1)} + 3T_{du}^{(3)} - T_{dv}^{(3)} \\
T_{yyzz} &= 4M_{f3}^{(1)} + 3T_{du}^{(3)} + T_{dv}^{(3)}
\end{aligned}$$

\* Rank 4 tensor (aas).

$$\begin{bmatrix}
T_{yzyz} & 0 & 0 \\
0 & T_{zxxz} & 0 \\
0 & 0 & T_{xyxy}
\end{bmatrix}$$

$$\begin{aligned}
T_{yzyz} &= -2T_{du}^{(4)} + 2T_{dv}^{(4)} + T_s^{(3)} \\
T_{zxxz} &= -2T_{du}^{(4)} - 2T_{dv}^{(4)} + T_s^{(3)} \\
T_{xyxy} &= 4T_{du}^{(4)} + T_s^{(3)}
\end{aligned}$$

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

$$\begin{bmatrix}
0 & 0 & 0 \\
0 & 0 & 0 \\
0 & 0 & 0 \\
T_{yzyz} & 0 & 0 \\
0 & T_{zxxz} & 0 \\
0 & 0 & T_{xyxy}
\end{bmatrix}$$

$$\begin{aligned}
T_{yzyz} &= M_{f3}^{(2)} - 3T_{du}^{(5)} - T_{dv}^{(5)} \\
T_{zxxz} &= M_{f3}^{(2)} + 3T_{du}^{(5)} - T_{dv}^{(5)} \\
T_{xyxy} &= M_{f3}^{(2)} + 2T_{dv}^{(5)}
\end{aligned}$$

\* Rank 4 tensor (as).

$$\begin{bmatrix}
0 & 0 & 0 & T_{yzyz} & 0 & 0 \\
0 & 0 & 0 & 0 & T_{zxxz} & 0 \\
0 & 0 & 0 & 0 & 0 & T_{xyxy}
\end{bmatrix}$$

$$T_{yzyz} = M_{f3}^{(3)} - 3T_{du}^{(6)} - T_{dv}^{(6)}$$

$$T_{zxzx} = M_{f3}^{(3)} + 3T_{du}^{(6)} - T_{dv}^{(6)}$$

$$T_{xyxy} = M_{f3}^{(3)} + 2T_{dv}^{(6)}$$

\* Rank 4 tensor (s).

$$\begin{bmatrix} T_{xxxx} & T_{xxyy} & T_{xxzz} & 0 & 0 & 0 & 0 & 0 & 0 \\ T_{yyxx} & T_{yyyy} & T_{yyzz} & 0 & 0 & 0 & 0 & 0 & 0 \\ T_{zzxx} & T_{zzyy} & T_{zzzz} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & T_{yzyz} & 0 & 0 & T_{yzzz} & 0 & 0 \\ 0 & 0 & 0 & 0 & T_{zxzx} & 0 & 0 & T_{zxzx} & 0 \\ 0 & 0 & 0 & 0 & 0 & T_{xyxy} & 0 & 0 & T_{xyyx} \end{bmatrix}$$

$$T_{xxxx} = -2T_{du}^{(1)} - 4T_{du}^{(2)} + 2T_{dv}^{(1)} + 4T_{dv}^{(2)} - T_{gu}^{(1)} + T_{gv}^{(1)} + 2T_g^{(1)} + T_s^{(1)} + 2T_s^{(2)}$$

$$T_{xxyy} = 4M_{f3}^{(1)} - 2T_{du}^{(1)} - 2T_{dv}^{(3)} + 2T_{gu}^{(1)} - T_g^{(1)} + T_s^{(1)}$$

$$T_{xxzz} = -4M_{f3}^{(1)} + T_{du}^{(1)} + 3T_{du}^{(3)} + T_{dv}^{(1)} - T_{dv}^{(3)} - T_{gu}^{(1)} - T_{gv}^{(1)} - T_g^{(1)} + T_s^{(1)}$$

$$T_{yyxx} = -4M_{f3}^{(1)} - 2T_{du}^{(1)} + 2T_{dv}^{(3)} + 2T_{gu}^{(1)} - T_g^{(1)} + T_s^{(1)}$$

$$T_{yyyy} = -2T_{du}^{(1)} - 4T_{du}^{(2)} - 2T_{dv}^{(1)} - 4T_{dv}^{(2)} - T_{gu}^{(1)} - T_{gv}^{(1)} + 2T_g^{(1)} + T_s^{(1)} + 2T_s^{(2)}$$

$$T_{yyzz} = 4M_{f3}^{(1)} + T_{du}^{(1)} + 3T_{du}^{(3)} - T_{dv}^{(1)} + T_{dv}^{(3)} - T_{gu}^{(1)} + T_{gv}^{(1)} - T_g^{(1)} + T_s^{(1)}$$

$$T_{zzxx} = 4M_{f3}^{(1)} + T_{du}^{(1)} - 3T_{du}^{(3)} + T_{dv}^{(1)} + T_{dv}^{(3)} - T_{gu}^{(1)} - T_{gv}^{(1)} - T_g^{(1)} + T_s^{(1)}$$

$$T_{zzyy} = -4M_{f3}^{(1)} + T_{du}^{(1)} - 3T_{du}^{(3)} - T_{dv}^{(1)} - T_{dv}^{(3)} - T_{gu}^{(1)} + T_{gv}^{(1)} - T_g^{(1)} + T_s^{(1)}$$

$$T_{zzzz} = 4T_{du}^{(1)} + 8T_{du}^{(2)} + 2T_{gu}^{(1)} + 2T_g^{(1)} + T_s^{(1)} + 2T_s^{(2)}$$

$$T_{yzyz} = M_{f3}^{(2)} + T_{du}^{(2)} - 3T_{du}^{(5)} - T_{dv}^{(2)} - T_{dv}^{(5)} - T_{gu}^{(1)} + T_{gv}^{(1)} - T_g^{(1)} + T_s^{(2)}$$

$$T_{yzzz} = -M_{f3}^{(2)} + T_{du}^{(2)} + 3T_{du}^{(5)} - T_{dv}^{(2)} + T_{dv}^{(5)} - T_{gu}^{(1)} + T_{gv}^{(1)} - T_g^{(1)} + T_s^{(2)}$$

$$T_{zxzx} = M_{f3}^{(2)} + T_{du}^{(2)} + 3T_{du}^{(5)} + T_{dv}^{(2)} - T_{dv}^{(5)} - T_{gu}^{(1)} - T_{gv}^{(1)} - T_g^{(1)} + T_s^{(2)}$$

$$T_{zxzx} = -M_{f3}^{(2)} + T_{du}^{(2)} - 3T_{du}^{(5)} + T_{dv}^{(2)} + T_{dv}^{(5)} - T_{gu}^{(1)} - T_{gv}^{(1)} - T_g^{(1)} + T_s^{(2)}$$

$$T_{xyxy} = M_{f3}^{(2)} - 2T_{du}^{(2)} + 2T_{dv}^{(5)} + 2T_{gu}^{(1)} - T_g^{(1)} + T_s^{(2)}$$

$$T_{xyyx} = -M_{f3}^{(2)} - 2T_{du}^{(2)} - 2T_{dv}^{(5)} + 2T_{gu}^{(1)} - T_g^{(1)} + T_s^{(2)}$$

\* Rank 4 tensor (a).

$$\begin{bmatrix} 0 & 0 & 0 & T_{yzyz} & 0 & 0 & T_{yzzz} & 0 & 0 \\ 0 & 0 & 0 & 0 & T_{zxzx} & 0 & 0 & T_{zxzx} & 0 \\ 0 & 0 & 0 & 0 & 0 & T_{xyxy} & 0 & 0 & T_{xyyx} \end{bmatrix}$$

$$T_{yzyz} = M_{f3}^{(3)} - 2T_{du}^{(4)} - 3T_{du}^{(6)} + 2T_{dv}^{(4)} - T_{dv}^{(6)} + T_s^{(3)}$$

$$T_{yzzz} = M_{f3}^{(3)} + 2T_{du}^{(4)} - 3T_{du}^{(6)} - 2T_{dv}^{(4)} - T_{dv}^{(6)} - T_s^{(3)}$$

$$T_{zxzx} = M_{f3}^{(3)} - 2T_{du}^{(4)} + 3T_{du}^{(6)} - 2T_{dv}^{(4)} - T_{dv}^{(6)} + T_s^{(3)}$$

$$T_{zxzx} = M_{f3}^{(3)} + 2T_{du}^{(4)} + 3T_{du}^{(6)} + 2T_{dv}^{(4)} - T_{dv}^{(6)} - T_s^{(3)}$$

$$T_{xyxy} = M_{f3}^{(3)} + 4T_{du}^{(4)} + 2T_{dv}^{(6)} + T_s^{(3)}$$

$$T_{xyyx} = M_{f3}^{(3)} - 4T_{du}^{(4)} + 2T_{dv}^{(6)} - T_s^{(3)}$$

\* Rank 4 tensor (t).

$$\begin{bmatrix} T_{xxxx} & 0 & 0 \\ 0 & T_{yyyy} & 0 \\ 0 & 0 & T_{zzzz} \\ 0 & 0 & T_{yyzz} \\ T_{zzxx} & 0 & 0 \\ 0 & T_{xxyy} & 0 \\ 0 & T_{yzzz} & 0 \\ 0 & 0 & T_{zzxz} \\ T_{xxyy} + T_{yyzz} - T_{yzzz} - T_{zzxz} + T_{zzxx} & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$T_{xxxx} = -2T_{du}^{(1)} - 4T_{du}^{(2)} + 2T_{dv}^{(1)} + 4T_{dv}^{(2)} - T_{gu}^{(1)} + T_{gv}^{(1)} + 2T_g^{(1)} + 3T_s^{(1)}$$

$$T_{yyyy} = -2T_{du}^{(1)} - 4T_{du}^{(2)} - 2T_{dv}^{(1)} - 4T_{dv}^{(2)} - T_{gu}^{(1)} - T_{gv}^{(1)} + 2T_g^{(1)} + 3T_s^{(1)}$$

$$T_{zzzz} = 4T_{du}^{(1)} + 8T_{du}^{(2)} + 2T_{gu}^{(1)} + 2T_g^{(1)} + 3T_s^{(1)}$$

$$T_{yyzz} = T_{du}^{(1)} + 3T_{du}^{(3)} - T_{dv}^{(1)} + T_{dv}^{(3)} - T_{gu}^{(1)} + T_{gv}^{(1)} - T_g^{(1)} + T_s^{(1)}$$

$$T_{zzxx} = T_{du}^{(1)} - 3T_{du}^{(3)} + T_{dv}^{(1)} + T_{dv}^{(3)} - T_{gu}^{(1)} - T_{gv}^{(1)} - T_g^{(1)} + T_s^{(1)}$$

$$T_{xxyy} = -2T_{du}^{(1)} - 2T_{dv}^{(3)} + 2T_{gu}^{(1)} - T_g^{(1)} + T_s^{(1)}$$

$$T_{yzzz} = T_{du}^{(2)} + 3T_{du}^{(5)} - T_{dv}^{(2)} + T_{dv}^{(5)} - T_{gu}^{(1)} + T_{gv}^{(1)} - T_g^{(1)} + T_s^{(1)}$$

$$T_{zzxz} = T_{du}^{(2)} - 3T_{du}^{(5)} + T_{dv}^{(2)} + T_{dv}^{(5)} - T_{gu}^{(1)} - T_{gv}^{(1)} - T_g^{(1)} + T_s^{(1)}$$