

\* Rank 0 tensor.

$$[M]$$

$$M = M_s^{(1)}$$

\* Rank 1 tensor. \* Rank 2 tensor (s).

$$\begin{bmatrix} M_{xx} & 0 & 0 \\ 0 & M_{xx} & 0 \\ 0 & 0 & M_{zz} \end{bmatrix}$$

$$M_{xx} = -M_{du}^{(1)} + M_s^{(1)}$$

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

\* Rank 2 tensor (a).

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

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

\* Rank 3 tensor (s).

$$\begin{bmatrix} M_{xxx} & M_{xxy} & 0 \\ -M_{xxx} & -M_{xxy} & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ M_{xxy} & -M_{xxx} & 0 \end{bmatrix}$$

$$M_{xxx} = M_{f2}^{(1)}$$

$$M_{xxy} = M_{f1}^{(1)}$$

\* Rank 3 tensor (a). \* Rank 4 tensor (sss).

$$\begin{bmatrix} M_{xxxx} & M_{xxyy} & M_{xxzz} & 0 & 0 & 0 \\ M_{xxyy} & M_{xxxx} & M_{xxzz} & 0 & 0 & 0 \\ M_{xxzz} & M_{xxzz} & M_{zzzz} & 0 & 0 & 0 \\ 0 & 0 & 0 & M_{yzyz} & 0 & 0 \\ 0 & 0 & 0 & 0 & M_{yzyz} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{M_{xxxx}}{2} - \frac{M_{xxyy}}{2} \end{bmatrix}$$

$$M_{xxxx} = -2M_{du}^{(1)} - 4M_{du}^{(2)} + 3M_{g0}^{(1)} + M_s^{(1)} + 2M_s^{(2)}$$

$$M_{xxyy} = -2M_{du}^{(1)} + M_{g0}^{(1)} + M_s^{(1)}$$

$$M_{xxzz} = M_{du}^{(1)} - 4M_{g0}^{(1)} + M_s^{(1)}$$

$$M_{zzzz} = 4M_{du}^{(1)} + 8M_{du}^{(2)} + 8M_{g0}^{(1)} + M_s^{(1)} + 2M_s^{(2)}$$

$$M_{yzyz} = M_{du}^{(2)} - 4M_{g0}^{(1)} + M_s^{(2)}$$

\* Rank 4 tensor (ssa).

$$\begin{bmatrix} 0 & 0 & M_{xxzz} & 0 & 0 & M_{xxyy} \\ 0 & 0 & M_{xxzz} & 0 & 0 & -M_{xxyy} \\ -M_{xxzz} & -M_{xxzz} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & M_{yzzx} & 0 \\ 0 & 0 & 0 & -M_{yzzx} & 0 & 0 \\ -M_{xxyy} & M_{xxyy} & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\begin{aligned}
M_{xxzz} &= 3M_{du}^{(3)} \\
M_{xxxy} &= -2T_{faz}^{(1)} + 2T_{pz}^{(1)} \\
M_{yzzx} &= -4T_{faz}^{(1)} - T_{pz}^{(1)}
\end{aligned}$$

\* Rank 4 tensor (aas).

$$\begin{bmatrix}
M_{yzyz} & 0 & 0 \\
0 & M_{yzyz} & 0 \\
0 & 0 & M_{xyxy}
\end{bmatrix}$$

$$\begin{aligned}
M_{yzyz} &= -2M_{du}^{(4)} + M_s^{(3)} \\
M_{xyxy} &= 4M_{du}^{(4)} + M_s^{(3)}
\end{aligned}$$

\* Rank 4 tensor (aaa).

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

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

\* Rank 4 tensor (sa).

$$\begin{bmatrix}
0 & 0 & M_{xxxx} \\
0 & 0 & M_{xxxxy} \\
0 & 0 & M_{zzxy} \\
M_{yzyz} & M_{yzzx} & 0 \\
M_{yzzx} & -M_{yzyz} & 0 \\
0 & 0 & 0
\end{bmatrix}$$

$$\begin{aligned}
M_{xxxx} &= -T_{faz}^{(2)} + T_{pz}^{(3)} \\
M_{zzxy} &= 2T_{faz}^{(2)} + T_{pz}^{(3)} + 2T_{pz}^{(4)} \\
M_{yzyz} &= -3M_{du}^{(5)} \\
M_{yzzx} &= -T_{faz}^{(2)} + T_{pz}^{(4)}
\end{aligned}$$

\* Rank 4 tensor (as).

$$\begin{bmatrix}
0 & 0 & 0 & M_{yzyz} & M_{yzzx} & 0 \\
0 & 0 & 0 & M_{yzzx} & -M_{yzyz} & 0 \\
M_{xyxx} & M_{xyxx} & M_{xyzz} & 0 & 0 & 0
\end{bmatrix}$$

$$\begin{aligned}
M_{yzyz} &= -3M_{du}^{(6)} \\
M_{yzzx} &= -T_{faz}^{(3)} + T_{pz}^{(6)} \\
M_{xyxx} &= -T_{faz}^{(3)} + T_{pz}^{(5)} \\
M_{xyzz} &= 2T_{faz}^{(3)} + T_{pz}^{(5)} + 2T_{pz}^{(6)}
\end{aligned}$$

\* Rank 4 tensor (s).

$$\begin{bmatrix}
M_{xxxx} & M_{xxyy} & M_{xxzz} & 0 & 0 & M_{xxxxy} & 0 & 0 & M_{xxyx} \\
M_{xxyy} & M_{xxxx} & M_{xxzz} & 0 & 0 & -M_{xxxxy} & 0 & 0 & -M_{xxyx} \\
M_{zzxx} & M_{zzxx} & M_{zzzz} & 0 & 0 & M_{zzxy} & 0 & 0 & -M_{zzxy} \\
0 & 0 & 0 & M_{yzyz} & M_{yzzx} & 0 & M_{yzyz} & M_{yzzx} & 0 \\
0 & 0 & 0 & -M_{yzzx} & M_{yzyz} & 0 & -M_{yzzx} & M_{yzyz} & 0 \\
-\frac{M_{xxyy}}{2} - \frac{M_{xyxx}}{2} & \frac{M_{xxyy}}{2} + \frac{M_{xyxx}}{2} & 0 & 0 & 0 & \frac{M_{xxxx}}{2} - \frac{M_{xxyy}}{2} & 0 & 0 & \frac{M_{xxxx}}{2} - \frac{M_{xxyy}}{2}
\end{bmatrix}$$

$$\begin{aligned}
M_{xxxx} &= -2M_{du}^{(1)} - 4M_{du}^{(2)} + 3M_{g0}^{(1)} + M_s^{(1)} + 2M_s^{(2)} \\
M_{xxyy} &= -2M_{du}^{(1)} + M_{g0}^{(1)} + M_s^{(1)} \\
M_{xxzz} &= M_{du}^{(1)} + 3M_{du}^{(3)} - 4M_{g0}^{(1)} + M_s^{(1)} \\
M_{xxxy} &= -2T_{faz}^{(1)} - T_{faz}^{(2)} + 2T_{pz}^{(1)} + T_{pz}^{(3)} \\
M_{xxyx} &= -2T_{faz}^{(1)} + T_{faz}^{(2)} + 2T_{pz}^{(1)} - T_{pz}^{(3)} \\
M_{zzxx} &= M_{du}^{(1)} - 3M_{du}^{(3)} - 4M_{g0}^{(1)} + M_s^{(1)} \\
M_{zzzz} &= 4M_{du}^{(1)} + 8M_{du}^{(2)} + 8M_{g0}^{(1)} + M_s^{(1)} + 2M_s^{(2)} \\
M_{zzxy} &= 2T_{faz}^{(2)} + T_{pz}^{(3)} + 2T_{pz}^{(4)} \\
M_{yzyz} &= M_{du}^{(2)} - 3M_{du}^{(5)} - 4M_{g0}^{(1)} + M_s^{(2)} \\
M_{yzzx} &= -4T_{faz}^{(1)} - T_{faz}^{(2)} - T_{pz}^{(1)} + T_{pz}^{(4)} \\
M_{yzyy} &= M_{du}^{(2)} + 3M_{du}^{(5)} - 4M_{g0}^{(1)} + M_s^{(2)} \\
M_{yzzz} &= -4T_{faz}^{(1)} + T_{faz}^{(2)} - T_{pz}^{(1)} - T_{pz}^{(4)}
\end{aligned}$$

\* Rank 4 tensor (a).

$$\begin{bmatrix}
0 & 0 & 0 & M_{yzyz} & M_{yzzx} & 0 & M_{yzyy} & M_{yzzz} & 0 \\
0 & 0 & 0 & M_{yzzz} & -M_{yzyy} & 0 & M_{yzzx} & -M_{yzyz} & 0 \\
M_{xyyx} & M_{xyxx} & M_{xyzz} & 0 & 0 & M_{xyxy} & 0 & 0 & -M_{xyxy}
\end{bmatrix}$$

$$\begin{aligned}
M_{yzyz} &= -2M_{du}^{(4)} - 3M_{du}^{(6)} + M_s^{(3)} \\
M_{yzzx} &= -T_{faz}^{(3)} - T_{pz}^{(2)} + T_{pz}^{(6)} \\
M_{yzyy} &= 2M_{du}^{(4)} - 3M_{du}^{(6)} - M_s^{(3)} \\
M_{yzzz} &= -T_{faz}^{(3)} + T_{pz}^{(2)} + T_{pz}^{(6)} \\
M_{xyyx} &= -T_{faz}^{(3)} + T_{pz}^{(5)} \\
M_{xyzz} &= 2T_{faz}^{(3)} + T_{pz}^{(5)} + 2T_{pz}^{(6)} \\
M_{xyxy} &= 4M_{du}^{(4)} + M_s^{(3)}
\end{aligned}$$

\* Rank 4 tensor (t).

$$\begin{bmatrix}
M_{xxxx} & 0 & 0 \\
0 & M_{xxxx} & 0 \\
0 & 0 & M_{zzzz} \\
0 & 0 & M_{yyzz} \\
M_{zzxx} & 0 & 0 \\
0 & M_{xxyy} & 0 \\
0 & M_{yzyy} & 0 \\
0 & 0 & -\frac{M_{xxxx}}{2} + \frac{3M_{xxyy}}{2} + M_{yyzz} - M_{yzyy} + M_{zzxx} \\
\frac{M_{xxxx}}{2} - \frac{M_{xxyy}}{2} & 0 & 0 \\
0 & 0 & 0
\end{bmatrix}$$

$$\begin{aligned}
M_{xxxx} &= -2M_{du}^{(1)} - 4M_{du}^{(2)} + 3M_{g0}^{(1)} + 3M_s^{(1)} \\
M_{zzzz} &= 4M_{du}^{(1)} + 8M_{du}^{(2)} + 8M_{g0}^{(1)} + 3M_s^{(1)} \\
M_{yyzz} &= M_{du}^{(1)} + 3M_{du}^{(3)} - 4M_{g0}^{(1)} + M_s^{(1)} \\
M_{zzxx} &= M_{du}^{(1)} - 3M_{du}^{(3)} - 4M_{g0}^{(1)} + M_s^{(1)} \\
M_{xxyy} &= -2M_{du}^{(1)} + M_{g0}^{(1)} + M_s^{(1)} \\
M_{yzyy} &= M_{du}^{(2)} + 3M_{du}^{(5)} - 4M_{g0}^{(1)} + M_s^{(1)}
\end{aligned}$$