

\* Rank 0 tensor.

$$[G]$$

$$G = G_s^{(1)}$$

\* Rank 1 tensor.

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

$$G_z = G_{pz}^{(1)}$$

\* Rank 2 tensor (s).

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

$$G_{xx} = -G_{du}^{(1)} + G_s^{(1)}$$

$$G_{zz} = 2G_{du}^{(1)} + G_s^{(1)}$$

\* Rank 2 tensor (a).

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

$$G_{xy} = Q_{pz}^{(1)}$$

\* Rank 3 tensor (s).

$$\begin{bmatrix} 0 & 0 & G_{xxz} \\ 0 & 0 & G_{xxz} \\ 0 & 0 & G_{zzz} \\ G_{yzx} & G_{yzy} & 0 \\ G_{yzy} & -G_{yzx} & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

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

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

$$G_{yzx} = -3Q_{du}^{(1)}$$

$$G_{yzy} = -G_{faz}^{(1)} + G_{pz}^{(2)}$$

\* Rank 3 tensor (a).

$$\begin{bmatrix} G_{yzx} & G_{yzy} & 0 \\ -G_{yzy} & G_{yzx} & 0 \\ 0 & 0 & G_{xyz} \end{bmatrix}$$

$$G_{yzx} = -Q_{du}^{(2)} + Q_s^{(1)}$$

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

$$G_{xyz} = 2Q_{du}^{(2)} + Q_s^{(1)}$$

\* Rank 4 tensor (sss).

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

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

$$G_{xxyy} = -2G_{du}^{(1)} + G_{g0}^{(1)} + G_s^{(1)}$$

$$G_{xxzz} = G_{du}^{(1)} - 4G_{g0}^{(1)} + G_s^{(1)}$$

$$G_{zzzz} = 4G_{du}^{(1)} + 8G_{du}^{(2)} + 8G_{g0}^{(1)} + G_s^{(1)} + 2G_s^{(2)}$$

$$G_{yzyz} = G_{du}^{(2)} - 4G_{g0}^{(1)} + G_s^{(2)}$$

\* Rank 4 tensor (ssa).

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

$$G_{xxzz} = 3G_{du}^{(3)}$$

$$G_{xxyy} = -2Q_{faz}^{(1)} + 2Q_{pz}^{(1)}$$

$$G_{yzzx} = -4Q_{faz}^{(1)} - Q_{pz}^{(1)}$$

\* Rank 4 tensor (aas).

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

$$G_{yzyz} = -2G_{du}^{(4)} + G_s^{(3)}$$

$$G_{xyxy} = 4G_{du}^{(4)} + G_s^{(3)}$$

\* Rank 4 tensor (aaa).

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

$$G_{yzzx} = -Q_{pz}^{(2)}$$

\* Rank 4 tensor (sa).

$$\begin{bmatrix} 0 & 0 & G_{xxxy} \\ 0 & 0 & G_{xxxy} \\ 0 & 0 & G_{zzxy} \\ G_{yzyz} & G_{yzzx} & 0 \\ G_{yzzx} & -G_{yzyz} & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$G_{xxxy} = -Q_{faz}^{(2)} + Q_{pz}^{(3)}$$

$$G_{zzxy} = 2Q_{faz}^{(2)} + Q_{pz}^{(3)} + 2Q_{pz}^{(4)}$$

$$G_{yzyz} = -3G_{du}^{(5)}$$

$$G_{yzzx} = -Q_{faz}^{(2)} + Q_{pz}^{(4)}$$

\* Rank 4 tensor (as).

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

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

\* Rank 4 tensor (s).

$$\begin{bmatrix} G_{xxxx} & G_{xxyy} & G_{xxzz} & 0 & 0 & G_{xxxy} & 0 & 0 & G_{xxyx} \\ G_{xxyy} & G_{xxxx} & G_{xxzz} & 0 & 0 & -G_{xxxy} & 0 & 0 & -G_{xxyx} \\ G_{zzxx} & G_{zzxx} & G_{zzzz} & 0 & 0 & G_{zzxy} & 0 & 0 & -G_{zzxy} \\ 0 & 0 & 0 & G_{yzyz} & G_{yzzx} & 0 & G_{yzzy} & G_{yzxz} & 0 \\ 0 & 0 & 0 & -G_{yzxz} & G_{yzzz} & 0 & -G_{yzzx} & G_{yzyz} & 0 \\ -\frac{G_{xxxy}}{2} - \frac{G_{xxyx}}{2} & \frac{G_{xxxy}}{2} + \frac{G_{xxyx}}{2} & 0 & 0 & 0 & \frac{G_{xxxx}}{2} - \frac{G_{xxyy}}{2} & 0 & 0 & \frac{G_{xxxx}}{2} - \frac{G_{xxyy}}{2} \end{bmatrix}$$

$$\begin{aligned} G_{xxxx} &= -2G_{du}^{(1)} - 4G_{du}^{(2)} + 3G_{g0}^{(1)} + G_s^{(1)} + 2G_s^{(2)} \\ G_{xxyy} &= -2G_{du}^{(1)} + G_{g0}^{(1)} + G_s^{(1)} \\ G_{xxzz} &= G_{du}^{(1)} + 3G_{du}^{(3)} - 4G_{g0}^{(1)} + G_s^{(1)} \\ G_{xxxy} &= -2Q_{faz}^{(1)} - Q_{faz}^{(2)} + 2Q_{pz}^{(1)} + Q_{pz}^{(3)} \\ G_{xxyx} &= -2Q_{faz}^{(1)} + Q_{faz}^{(2)} + 2Q_{pz}^{(1)} - Q_{pz}^{(3)} \\ G_{zzxx} &= G_{du}^{(1)} - 3G_{du}^{(3)} - 4G_{g0}^{(1)} + G_s^{(1)} \\ G_{zzzz} &= 4G_{du}^{(1)} + 8G_{du}^{(2)} + 8G_{g0}^{(1)} + G_s^{(1)} + 2G_s^{(2)} \\ G_{zzxy} &= 2Q_{faz}^{(2)} + Q_{pz}^{(3)} + 2Q_{pz}^{(4)} \\ G_{yzyz} &= G_{du}^{(2)} - 3G_{du}^{(5)} - 4G_{g0}^{(1)} + G_s^{(2)} \\ G_{yzzx} &= -4Q_{faz}^{(1)} - Q_{faz}^{(2)} - Q_{pz}^{(1)} + Q_{pz}^{(4)} \\ G_{yzzy} &= G_{du}^{(2)} + 3G_{du}^{(5)} - 4G_{g0}^{(1)} + G_s^{(2)} \\ G_{yzxz} &= -4Q_{faz}^{(1)} + Q_{faz}^{(2)} - Q_{pz}^{(1)} - Q_{pz}^{(4)} \end{aligned}$$

\* Rank 4 tensor (a).

$$\begin{bmatrix} 0 & 0 & 0 & G_{yzyz} & G_{yzzx} & 0 & G_{yzzy} & G_{yzzx} & 0 \\ 0 & 0 & 0 & G_{yzzx} & -G_{yzzy} & 0 & G_{yzzx} & -G_{yzyz} & 0 \\ G_{xyxx} & G_{xyxx} & G_{xyzz} & 0 & 0 & G_{xyxy} & 0 & 0 & -G_{xyxy} \end{bmatrix}$$

$$\begin{aligned} G_{yzyz} &= -2G_{du}^{(4)} - 3G_{du}^{(6)} + G_s^{(3)} \\ G_{yzzx} &= -Q_{faz}^{(3)} - Q_{pz}^{(2)} + Q_{pz}^{(6)} \\ G_{yzzy} &= 2G_{du}^{(4)} - 3G_{du}^{(6)} - G_s^{(3)} \\ G_{yzzx} &= -Q_{faz}^{(3)} + Q_{pz}^{(2)} + Q_{pz}^{(6)} \\ G_{xyxx} &= -Q_{faz}^{(3)} + Q_{pz}^{(5)} \\ G_{xyzz} &= 2Q_{faz}^{(3)} + Q_{pz}^{(5)} + 2Q_{pz}^{(6)} \\ G_{xyxy} &= 4G_{du}^{(4)} + G_s^{(3)} \end{aligned}$$

\* Rank 4 tensor (t).

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

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

$$G_{zzzz} = 4G_{du}^{(1)} + 8G_{du}^{(2)} + 8G_{g0}^{(1)} + 3G_s^{(1)}$$

$$G_{yyzz} = G_{du}^{(1)} + 3G_{du}^{(3)} - 4G_{g0}^{(1)} + G_s^{(1)}$$

$$G_{zzxx} = G_{du}^{(1)} - 3G_{du}^{(3)} - 4G_{g0}^{(1)} + G_s^{(1)}$$

$$G_{xxyy} = -2G_{du}^{(1)} + G_{g0}^{(1)} + G_s^{(1)}$$

$$G_{yyzy} = G_{du}^{(2)} + 3G_{du}^{(5)} - 4G_{g0}^{(1)} + G_s^{(1)}$$