* Rank 0 tensor.

$$[Q]$$

$$Q = Q_s^{(1)}$$

* Rank 1 tensor.

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

$$Q_z = Q_{pz}^{(1)}$$

* Rank 2 tensor (s).

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

$$Q_{xx} = -Q_{du}^{(1)} + Q_s^{(1)}$$
$$Q_{zz} = 2Q_{du}^{(1)} + Q_s^{(1)}$$

* Rank 2 tensor (a).

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

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

* Rank 3 tensor (s).

$$\begin{bmatrix} Q_{xxx} & Q_{xxy} & Q_{xxz} \\ -Q_{xxx} & -Q_{xxy} & Q_{xxz} \\ 0 & 0 & Q_{zzz} \\ Q_{yzx} & Q_{yzy} & 0 \\ Q_{yzy} & -Q_{yzx} & 0 \\ Q_{xxy} & -Q_{xxx} & 0 \end{bmatrix}$$

$$Q_{xxx} = Q_{f2}^{(1)}$$
$$Q_{xxy} = Q_{f1}^{(1)}$$
$$Q_{xxz} = -Q_{faz}^{(1)} + Q_{pz}^{(1)}$$
$$Q_{zzz} = 2Q_{faz}^{(1)} + Q_{pz}^{(1)} + 2Q_{pz}^{(2)}$$
$$Q_{yzx} = -3G_{du}^{(1)}$$
$$Q_{yzy} = -Q_{faz}^{(1)} + Q_{pz}^{(2)}$$

* Rank 3 tensor (a).

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

$$Q_{yzx} = -G_{du}^{(2)} + G_s^{(1)}$$
$$Q_{yzy} = Q_{pz}^{(3)}$$
$$Q_{xyz} = 2G_{du}^{(2)} + G_s^{(1)}$$

* Rank 4 tensor (sss).

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

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

$$Q_{xxyy} = -2Q_{du}^{(1)} + Q_{g0}^{(1)} + Q_s^{(1)}$$

$$Q_{xxzz} = Q_{du}^{(1)} - 4Q_{g0}^{(1)} + Q_s^{(1)}$$

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

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

$$Q_{zzzz} = 4Q_{du}^{(1)} + 8Q_{du}^{(2)} + 8Q_{g0}^{(1)} + Q_s^{(1)} + 2Q_s^{(2)}$$

$$Q_{yzyz} = Q_{du}^{(2)} - 4Q_{g0}^{(1)} + Q_s^{(2)}$$

* Rank 4 tensor (ssa).

$$
\begin{bmatrix}
0 & 0 & Q_{xxzz} & Q_{xxyz} & Q_{xxzx} & Q_{xxxy} \\
0 & 0 & Q_{xxzz} & -Q_{xxyz} & -Q_{xxzx} & -Q_{xxxy} \\
-Q_{xxzz} & -Q_{xxzz} & 0 & 0 & 0 & 0 \\
-Q_{xxyz} & Q_{xxyz} & 0 & 0 & Q_{yzzx} & Q_{xxzx} \\
-Q_{xxzx} & Q_{xxzx} & 0 & -Q_{yzzx} & 0 & -Q_{xxyz} \\
-Q_{xxxy} & Q_{xxxy} & 0 & -Q_{xxzx} & Q_{xxyz} & 0
\end{bmatrix}
$$

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

$$Q_{xxyz} = 2G_{f2}^{(1)}$$

$$Q_{xxzx} = -2G_{f1}^{(1)}$$

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

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

* Rank 4 tensor (aas).

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

$$Q_{yzyz} = -2Q_{du}^{(4)} + Q_s^{(3)}$$

$$Q_{xyxy} = 4Q_{du}^{(4)} + Q_s^{(3)}$$

* Rank 4 tensor (aaa).

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

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

* Rank 4 tensor (sa).

$$
\begin{bmatrix}
Q_{xxyz} & Q_{xxzx} & Q_{xxxy} \\
-Q_{xxyz} & -Q_{xxzx} & Q_{xxxy} \\
0 & 0 & Q_{zzxy} \\
Q_{yzyz} & Q_{yzzx} & 0 \\
Q_{yzzx} & -Q_{yzyz} & 0 \\
Q_{xxzx} & -Q_{xxyz} & 0
\end{bmatrix}
$$

2

$$Q_{xxyz} = G_{f2}^{(2)}$$

$$Q_{xxzx} = G_{f1}^{(2)}$$

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

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

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

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

* Rank 4 tensor (as).

$$
\begin{bmatrix}
Q_{yzxx} & -Q_{yzxx} & 0 & Q_{yzyz} & Q_{yzzx} & Q_{yzxy} \\
Q_{yzxy} & -Q_{yzxy} & 0 & Q_{yzzx} & -Q_{yzyz} & -Q_{yzxx} \\
Q_{xyxx} & Q_{xyxx} & Q_{xyzz} & 0 & 0 & 0
\end{bmatrix}
$$

$$Q_{yzxx} = G_{f2}^{(3)}$$

$$Q_{yzyz} = -3Q_{du}^{(6)}$$

$$Q_{yzzx} = -G_{faz}^{(3)} + G_{pz}^{(6)}$$

$$Q_{yzxy} = G_{f1}^{(3)}$$

$$Q_{xyxx} = -G_{faz}^{(3)} + G_{pz}^{(5)}$$

$$Q_{xyzz} = 2G_{faz}^{(3)} + G_{pz}^{(5)} + 2G_{pz}^{(6)}$$

* Rank 4 tensor (s).

$$
\begin{bmatrix}
Q_{xxxx} & Q_{xxyy} & Q_{xxzz} & Q_{xxyz} & Q_{xxzx} & Q_{xxxy} & Q_{xxzy} & Q_{xxxz} & Q_{xxyx} \\
Q_{xxyy} & Q_{xxxx} & Q_{xxzz} & -Q_{xxyz} & -Q_{xxzx} & -Q_{xxyx} & -Q_{xxzy} & -Q_{xxxz} & -Q_{xxxy} \\
Q_{zzxx} & Q_{zzxx} & Q_{zzzz} & 0 & 0 & Q_{zzxy} & 0 & 0 & -Q_{zzxy} \\
Q_{yzxx} & -Q_{yzxx} & 0 & Q_{yzyz} & Q_{yzzx} & Q_{yzxy} & Q_{yzzy} & Q_{yzxz} & Q_{yzxy} \\
-Q_{yzxy} & Q_{yzxy} & 0 & -Q_{yzxz} & Q_{yzzy} & Q_{yzxx} & -Q_{yzzx} & Q_{yzyz} & Q_{yzxx} \\
-\frac{Q_{xxxy}}{2} - \frac{Q_{xxyx}}{2} & \frac{Q_{xxxy}}{2} + \frac{Q_{xxyx}}{2} & 0 & -Q_{xxxz} & Q_{xxzy} & \frac{Q_{xxxx}}{2} - \frac{Q_{xxyy}}{2} & -Q_{xxzx} & Q_{xxyz} & \frac{Q_{xxxx}}{2} - \frac{Q_{xxyy}}{2}
\end{bmatrix}
$$

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

$$Q_{xxyy} = -2Q_{du}^{(1)} + Q_{g0}^{(1)} + Q_s^{(1)}$$

$$Q_{xxzz} = Q_{du}^{(1)} + 3Q_{du}^{(3)} - 4Q_{g0}^{(1)} + Q_s^{(1)}$$

$$Q_{xxyz} = 2G_{f2}^{(1)} + G_{f2}^{(2)} + Q_{gb}^{(1)}$$

$$Q_{xxzx} = -2G_{f1}^{(1)} + G_{f1}^{(2)} + Q_{ga}^{(1)}$$

$$Q_{xxxy} = -2G_{faz}^{(1)} - G_{faz}^{(2)} + 2G_{pz}^{(1)} + G_{pz}^{(3)}$$

$$Q_{xxzy} = 2G_{f2}^{(1)} - G_{f2}^{(2)} + Q_{gb}^{(1)}$$

$$Q_{xxxz} = -2G_{f1}^{(1)} - G_{f1}^{(2)} + Q_{ga}^{(1)}$$

$$Q_{xxyx} = -2G_{faz}^{(1)} + G_{faz}^{(2)} + 2G_{pz}^{(1)} - G_{pz}^{(3)}$$

$$Q_{zzxx} = Q_{du}^{(1)} - 3Q_{du}^{(3)} - 4Q_{g0}^{(1)} + Q_s^{(1)}$$

$$Q_{zzzz} = 4Q_{du}^{(1)} + 8Q_{du}^{(2)} + 8Q_{g0}^{(1)} + Q_s^{(1)} + 2Q_s^{(2)}$$

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

$$Q_{yzxx} = -2G_{f2}^{(1)} + Q_{gb}^{(1)}$$

$$Q_{yzyz} = Q_{du}^{(2)} - 3Q_{du}^{(5)} - 4Q_{g0}^{(1)} + Q_s^{(2)}$$

$$Q_{yzzx} = -4G_{faz}^{(1)} - G_{faz}^{(2)} - G_{pz}^{(1)} + G_{pz}^{(4)}$$

$$Q_{yzxy} = -2G_{f1}^{(1)} - Q_{ga}^{(1)}$$

$$Q_{yzzy} = Q_{du}^{(2)} + 3Q_{du}^{(5)} - 4Q_{g0}^{(1)} + Q_s^{(2)}$$

$$Q_{yzxz} = -4G_{faz}^{(1)} + G_{faz}^{(2)} - G_{pz}^{(1)} - G_{pz}^{(4)}$$

* Rank 4 tensor (a).

$$\begin{bmatrix} Q_{yzxx} & -Q_{yzxx} & 0 & Q_{yzyz} & Q_{yzzx} & Q_{yzxy} & Q_{yzzy} & Q_{yzxz} & Q_{yzxy} \\ Q_{yzxy} & -Q_{yzxy} & 0 & Q_{yzxz} & -Q_{yzzy} & -Q_{yzxx} & Q_{yzzx} & -Q_{yzyz} & -Q_{yzxx} \\ Q_{xyxx} & Q_{xyxx} & Q_{xyzz} & 0 & 0 & Q_{xyxy} & 0 & 0 & -Q_{xyxy} \end{bmatrix}$$

$$Q_{yzxx} = G_{f2}^{(3)}$$
$$Q_{yzyz} = -2Q_{du}^{(4)} - 3Q_{du}^{(6)} + Q_{s}^{(3)}$$
$$Q_{yzzx} = -G_{faz}^{(3)} - G_{pz}^{(2)} + G_{pz}^{(6)}$$
$$Q_{yzxy} = G_{f1}^{(3)}$$
$$Q_{yzzy} = 2Q_{du}^{(4)} - 3Q_{du}^{(6)} - Q_{s}^{(3)}$$
$$Q_{yzxz} = -G_{faz}^{(3)} + G_{pz}^{(2)} + G_{pz}^{(6)}$$
$$Q_{xyxx} = -G_{faz}^{(3)} + G_{pz}^{(5)}$$
$$Q_{xyzz} = 2G_{faz}^{(3)} + G_{pz}^{(5)} + 2G_{pz}^{(6)}$$
$$Q_{xyxy} = 4Q_{du}^{(4)} + Q_{s}^{(3)}$$

* Rank 4 tensor (t).

$$\begin{bmatrix} Q_{xxxx} & 0 & Q_{xxxz} \\ 0 & Q_{xxxx} & Q_{yyyz} \\ 0 & 0 & Q_{zzzz} \\ -Q_{xxxz} & Q_{yyyz} & Q_{yyzz} \\ Q_{zzxx} & 0 & 0 \\ 0 & Q_{xxyy} & -Q_{yyyz} \\ 0 & Q_{yzzy} & 0 \\ Q_{xxxz} & -Q_{yyyz} & -\frac{Q_{xxxx}}{2} + \frac{3Q_{xxyy}}{2} + Q_{yyzz} - Q_{yzzy} + Q_{zzxx} \\ \frac{Q_{xxxx}}{2} - \frac{Q_{xxyy}}{2} & 0 & -Q_{xxxz} \\ -Q_{yyyz} & -Q_{xxxz} & 0 \end{bmatrix}$$

$$Q_{xxxx} = -2Q_{du}^{(1)} - 4Q_{du}^{(2)} + 3Q_{g0}^{(1)} + 3Q_{s}^{(1)}$$
$$Q_{xxxz} = Q_{ga}^{(1)}$$
$$Q_{yyyz} = -Q_{gb}^{(1)}$$
$$Q_{zzzz} = 4Q_{du}^{(1)} + 8Q_{du}^{(2)} + 8Q_{g0}^{(1)} + 3Q_{s}^{(1)}$$
$$Q_{yyzz} = Q_{du}^{(1)} + 3Q_{du}^{(3)} - 4Q_{g0}^{(1)} + Q_{s}^{(1)}$$
$$Q_{zzxx} = Q_{du}^{(1)} - 3Q_{du}^{(3)} - 4Q_{g0}^{(1)} + Q_{s}^{(1)}$$
$$Q_{xxyy} = -2Q_{du}^{(1)} + Q_{g0}^{(1)} + Q_{s}^{(1)}$$
$$Q_{yzzy} = Q_{du}^{(2)} + 3Q_{du}^{(5)} - 4Q_{g0}^{(1)} + Q_{s}^{(1)}$$