

SG No. 92 D_4^4 $P4_12_12$ [tetragonal]

* generator : $\{2_{001}|00\frac{1}{2}\}$, $\{4_{001}^+|\frac{1}{2}\frac{1}{2}\frac{1}{4}\}$, $\{2_{010}|\frac{1}{2}\frac{1}{2}\frac{1}{4}\}$

* symmetry operation $+ [0, 0, 0]$

Table 1: Symmetry operations for 3d polar vector.

| No. | tag | matrix (polar) | det |
|-----|---|---|-----|
| 1 | $\{1 0\}$ | $\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}$ | 1 |
| 2 | $\{2_{001} 00\frac{1}{2}\}$ | $\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 1 & \frac{1}{2} \end{bmatrix}$ | 1 |
| 3 | $\{4_{001}^+ \frac{1}{2}\frac{1}{2}\frac{1}{4}\}$ | $\begin{bmatrix} 0 & -1 & 0 & \frac{1}{2} \\ 1 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 1 & \frac{1}{4} \end{bmatrix}$ | 1 |
| 4 | $\{4_{001}^- \frac{1}{2}\frac{1}{2}\frac{3}{4}\}$ | $\begin{bmatrix} 0 & 1 & 0 & \frac{1}{2} \\ -1 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 1 & \frac{3}{4} \end{bmatrix}$ | 1 |
| 5 | $\{2_{010} \frac{1}{2}\frac{1}{2}\frac{1}{4}\}$ | $\begin{bmatrix} -1 & 0 & 0 & \frac{1}{2} \\ 0 & 1 & 0 & \frac{1}{2} \\ 0 & 0 & -1 & \frac{1}{4} \end{bmatrix}$ | 1 |
| 6 | $\{2_{100} \frac{1}{2}\frac{1}{2}\frac{3}{4}\}$ | $\begin{bmatrix} 1 & 0 & 0 & \frac{1}{2} \\ 0 & -1 & 0 & \frac{1}{2} \\ 0 & 0 & -1 & \frac{3}{4} \end{bmatrix}$ | 1 |
| 7 | $\{2_{110} 0\}$ | $\begin{bmatrix} 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{bmatrix}$ | 1 |
| 8 | $\{2_{1-10} 00\frac{1}{2}\}$ | $\begin{bmatrix} 0 & -1 & 0 & 0 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & \frac{1}{2} \end{bmatrix}$ | 1 |