

SG No. 154 D_3^6 $P3_221$ [trigonal]

* generator : $\{3_{001}^+|00\frac{2}{3}\}$, $\{2_{110}|0\}$

* 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 | $\{3_{001}^+ 00\frac{2}{3}\}$ | $\begin{bmatrix} 0 & -1 & 0 & 0 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & 1 & \frac{2}{3} \end{bmatrix}$ | 1 |
| 3 | $\{3_{001}^- 00\frac{1}{3}\}$ | $\begin{bmatrix} -1 & 1 & 0 & 0 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & 1 & \frac{1}{3} \end{bmatrix}$ | 1 |
| 4 | $\{2_{110} 0\}$ | $\begin{bmatrix} 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{bmatrix}$ | 1 |
| 5 | $\{2_{100} 00\frac{1}{3}\}$ | $\begin{bmatrix} 1 & -1 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & \frac{1}{3} \end{bmatrix}$ | 1 |
| 6 | $\{2_{010} 00\frac{2}{3}\}$ | $\begin{bmatrix} -1 & 0 & 0 & 0 \\ -1 & 1 & 0 & 0 \\ 0 & 0 & -1 & \frac{2}{3} \end{bmatrix}$ | 1 |