SG No. 180 $\quad D_6^4 \quad P6_222$ [hexagonal]

* generator : $\{3_{001}^+|00\tfrac{2}{3}\}$, $\{2_{001}|0\}$, $\{2_{110}|00\tfrac{2}{3}\}$
* symmetry operation $\quad + [0, 0, 0]$

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	$\{3_{001}^+|00\tfrac{2}{3}\}$	$\begin{bmatrix} 0 & -1 & 0 & 0 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & 1 & \tfrac{2}{3} \end{bmatrix}$	1
3	$\{3_{001}^-|00\tfrac{1}{3}\}$	$\begin{bmatrix} -1 & 1 & 0 & 0 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & 1 & \tfrac{1}{3} \end{bmatrix}$	1
4	$\{2_{001}|0\}$	$\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}$	1
5	$\{6_{001}^-|00\tfrac{2}{3}\}$	$\begin{bmatrix} 0 & 1 & 0 & 0 \\ -1 & 1 & 0 & 0 \\ 0 & 0 & 1 & \tfrac{2}{3} \end{bmatrix}$	1
6	$\{6_{001}^+|00\tfrac{1}{3}\}$	$\begin{bmatrix} 1 & -1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & \tfrac{1}{3} \end{bmatrix}$	1
7	$\{2_{110}|00\tfrac{2}{3}\}$	$\begin{bmatrix} 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & \tfrac{2}{3} \end{bmatrix}$	1
8	$\{2_{100}|0\}$	$\begin{bmatrix} 1 & -1 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{bmatrix}$	1
9	$\{2_{010}|00\tfrac{1}{3}\}$	$\begin{bmatrix} -1 & 0 & 0 & 0 \\ -1 & 1 & 0 & 0 \\ 0 & 0 & -1 & \tfrac{1}{3} \end{bmatrix}$	1
10	$\{2_{1-10}|00\tfrac{2}{3}\}$	$\begin{bmatrix} 0 & -1 & 0 & 0 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & \tfrac{2}{3} \end{bmatrix}$	1
11	$\{2_{120}|0\}$	$\begin{bmatrix} -1 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{bmatrix}$	1
12	$\{2_{210}|00\tfrac{1}{3}\}$	$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & -1 & \tfrac{1}{3} \end{bmatrix}$	1