

PG No. 28  $T$  23 [ cubic ]

\* generator :  $2_{001}$ ,  $2_{010}$ ,  $3^+_{111}$

\* conjugacy class

[1] : 1

[ $2_{001}$ ] :  $2_{001}$ ,  $2_{100}$ ,  $2_{010}$

[ $3^+_{111}$ ] :  $3^+_{111}$ ,  $3^+_{1-1-1}$ ,  $3^+_{-11-1}$ ,  $3^+_{-1-11}$ ,  $3^-_{111}$ ,  $3^-_{1-1-1}$ ,  $3^-_{-11-1}$ ,  $3^-_{-1-11}$

\* symmetry operation

Table 1: Symmetry operations for 3d polar vector.

No.	tag	matrix (polar)	det
1	1	$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$	1
2	$2_{001}$	$\begin{bmatrix} -1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$	1
3	$2_{010}$	$\begin{bmatrix} -1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$	1
4	$2_{100}$	$\begin{bmatrix} 1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$	1
5	$3^+_{111}$	$\begin{bmatrix} 0 & 0 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix}$	1
6	$3^+_{-11-1}$	$\begin{bmatrix} 0 & 0 & 1 \\ -1 & 0 & 0 \\ 0 & -1 & 0 \end{bmatrix}$	1
7	$3^+_{1-1-1}$	$\begin{bmatrix} 0 & 0 & -1 \\ -1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix}$	1
8	$3^+_{-1-11}$	$\begin{bmatrix} 0 & 0 & -1 \\ 1 & 0 & 0 \\ 0 & -1 & 0 \end{bmatrix}$	1
9	$3^-_{111}$	$\begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \end{bmatrix}$	1
10	$3^-_{1-1-1}$	$\begin{bmatrix} 0 & -1 & 0 \\ 0 & 0 & 1 \\ -1 & 0 & 0 \end{bmatrix}$	1
11	$3^-_{-1-11}$	$\begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & -1 \\ -1 & 0 & 0 \end{bmatrix}$	1

$$\begin{array}{c} \\ \hline & & \left[ \begin{matrix} 0 & -1 & 0 \\ 0 & 0 & -1 \\ 1 & 0 & 0 \end{matrix} \right] & \\ \hline \hline 12 & 3^-_{-11-1} & & 1 \end{array}$$