MSG No. 137.507 $P4_2/nmc$ [Type I, tetragonal]

* symmetry operation

Table 1: Symmetry operations for 3d polar vector.

No.	tag	matrix (polar)	det	TR
1	$\{1\|0\}$	$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}$	1	1
2	$\{4^+_{001}\|\frac{1}{2}0\frac{1}{2}\}$	$\begin{bmatrix} 0 & -1 & 0 & \frac{1}{2} \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & \frac{1}{2} \end{bmatrix}$	1	1
3	$\{4^-_{001}\|0\frac{1}{2}\frac{1}{2}\}$	$\begin{bmatrix} 0 & 1 & 0 & 0 \\ -1 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 1 & \frac{1}{2} \end{bmatrix}$	1	1
4	$\{2_{100}\|\frac{1}{2}00\}$	$\begin{bmatrix} 1 & 0 & 0 & \frac{1}{2} \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{bmatrix}$	1	1
5	$\{2_{010}\|0\frac{1}{2}0\}$	$\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & 1 & 0 & \frac{1}{2} \\ 0 & 0 & -1 & 0 \end{bmatrix}$	1	1
6	$\{2_{001}\|\frac{1}{2}\frac{1}{2}0\}$	$\begin{bmatrix} -1 & 0 & 0 & \frac{1}{2} \\ 0 & -1 & 0 & \frac{1}{2} \\ 0 & 0 & 1 & 0 \end{bmatrix}$	1	1
7	$\{2_{110}\|\frac{1}{2}\frac{1}{2}\frac{1}{2}\}$	$\begin{bmatrix} 0 & 1 & 0 & \frac{1}{2} \\ 1 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & -1 & \frac{1}{2} \end{bmatrix}$	1	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	1
9	$\{-1\|0\}$	$\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{bmatrix}$	−1	1
10	$\{-4^+_{001}\|\frac{1}{2}0\frac{1}{2}\}$	$\begin{bmatrix} 0 & 1 & 0 & \frac{1}{2} \\ -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & \frac{1}{2} \end{bmatrix}$	−1	1
11	$\{-4^-_{001}\|0\frac{1}{2}\frac{1}{2}\}$	$\begin{bmatrix} 0 & -1 & 0 & 0 \\ 1 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & -1 & \frac{1}{2} \end{bmatrix}$	−1	1
12	$\{\mathrm{m}_{100}\|\frac{1}{2}00\}$	$\begin{bmatrix} -1 & 0 & 0 & \frac{1}{2} \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}$	−1	1
13	$\{\mathrm{m}_{010}\|0\frac{1}{2}0\}$	$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & -1 & 0 & \frac{1}{2} \\ 0 & 0 & 1 & 0 \end{bmatrix}$	−1	1

continued ...

Table 1

No.	tag	matrix (polar)	det	TR
14	$\{\mathrm{m}_{001}\vert\frac{1}{2}\frac{1}{2}0\}$	$\begin{bmatrix}1 & 0 & 0 & \frac{1}{2}\\ 0 & 1 & 0 & \frac{1}{2}\\ 0 & 0 & -1 & 0\end{bmatrix}$	-1	1
15	$\{\mathrm{m}_{110}\vert\frac{1}{2}\frac{1}{2}\frac{1}{2}\}$	$\begin{bmatrix}0 & -1 & 0 & \frac{1}{2}\\ -1 & 0 & 0 & \frac{1}{2}\\ 0 & 0 & 1 & \frac{1}{2}\end{bmatrix}$	-1	1
16	$\{\mathrm{m}_{1-10}\vert 00\frac{1}{2}\}$	$\begin{bmatrix}0 & 1 & 0 & 0\\ 1 & 0 & 0 & 0\\ 0 & 0 & 1 & \frac{1}{2}\end{bmatrix}$	-1	1