

MSG No. 178.159  $P6_12'2'$  [ Type III, hexagonal ]

\* 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	{6 <sup>+</sup> <sub>001</sub>  00 <sub>6</sub> <sup>1</sup> }	$\begin{bmatrix} 1 & -1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & \frac{1}{6} \end{bmatrix}$	1	1
3	{3 <sup>+</sup> <sub>001</sub>  00 <sub>3</sub> <sup>1</sup> }	$\begin{bmatrix} 0 & -1 & 0 & 0 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & 1 & \frac{1}{3} \end{bmatrix}$	1	1
4	{2 <sub>001</sub>  00 <sub>2</sub> <sup>1</sup> }	$\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 1 & \frac{1}{2} \end{bmatrix}$	1	1
5	{3 <sup>-</sup> <sub>001</sub>  00 <sub>3</sub> <sup>2</sup> }	$\begin{bmatrix} -1 & 1 & 0 & 0 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & 1 & \frac{2}{3} \end{bmatrix}$	1	1
6	{6 <sup>-</sup> <sub>001</sub>  00 <sub>6</sub> <sup>5</sup> }	$\begin{bmatrix} 0 & 1 & 0 & 0 \\ -1 & 1 & 0 & 0 \\ 0 & 0 & 1 & \frac{5}{6} \end{bmatrix}$	1	1
7	{2 <sub>100</sub> ' 0}	$\begin{bmatrix} 1 & -1 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{bmatrix}$	1	-1
8	{2 <sub>110</sub> ' 00 <sub>3</sub> <sup>1</sup> }	$\begin{bmatrix} 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & \frac{1}{3} \end{bmatrix}$	1	-1
9	{2 <sub>010</sub> ' 00 <sub>3</sub> <sup>2</sup> }	$\begin{bmatrix} -1 & 0 & 0 & 0 \\ -1 & 1 & 0 & 0 \\ 0 & 0 & -1 & \frac{2}{3} \end{bmatrix}$	1	-1
10	{2 <sub>210</sub> ' 00 <sub>6</sub> <sup>1</sup> }	$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & -1 & \frac{1}{6} \end{bmatrix}$	1	-1
11	{2 <sub>120</sub> ' 00 <sub>2</sub> <sup>1</sup> }	$\begin{bmatrix} -1 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & \frac{1}{2} \end{bmatrix}$	1	-1
12	{2 <sub>1-10</sub> ' 00 <sub>6</sub> <sup>5</sup> }	$\begin{bmatrix} 0 & -1 & 0 & 0 \\ -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & \frac{5}{6} \end{bmatrix}$	1	-1