

MSG No. 25.64  $P_Amm2$  [ Type IV, orthorhombic ]

\* 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   | $\{2_{001} 0\}$                        | $\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}$                     | 1   | 1  |
| 3   | $\{m_{100} 0\}$                        | $\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}$                      | -1  | 1  |
| 4   | $\{m_{010} 0\}$                        | $\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}$                      | -1  | 1  |
| 5   | $\{1' 0\frac{1}{2}\frac{1}{2}\}$       | $\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & \frac{1}{2} \\ 0 & 0 & 1 & \frac{1}{2} \end{bmatrix}$   | 1   | -1 |
| 6   | $\{2_{001}' 0\frac{1}{2}\frac{1}{2}\}$ | $\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & \frac{1}{2} \\ 0 & 0 & 1 & \frac{1}{2} \end{bmatrix}$ | 1   | -1 |
| 7   | $\{m_{100}' 0\frac{1}{2}\frac{1}{2}\}$ | $\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & 1 & 0 & \frac{1}{2} \\ 0 & 0 & 1 & \frac{1}{2} \end{bmatrix}$  | -1  | -1 |
| 8   | $\{m_{010}' 0\frac{1}{2}\frac{1}{2}\}$ | $\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & -1 & 0 & \frac{1}{2} \\ 0 & 0 & 1 & \frac{1}{2} \end{bmatrix}$  | -1  | -1 |