Anthophyllite ($Mg_5Fe_2Si_8O_{22}(OH)_2$, $S4_4$) Structure: A2B5C22D2E8_oP156_62_d_c2d_2c10d_2c_4d-001

This structure originally had the label `A2B5C22D2E8_oP156_62_d_c2d_2c10d_2c_4d`. Calls to that address will be redirected here.

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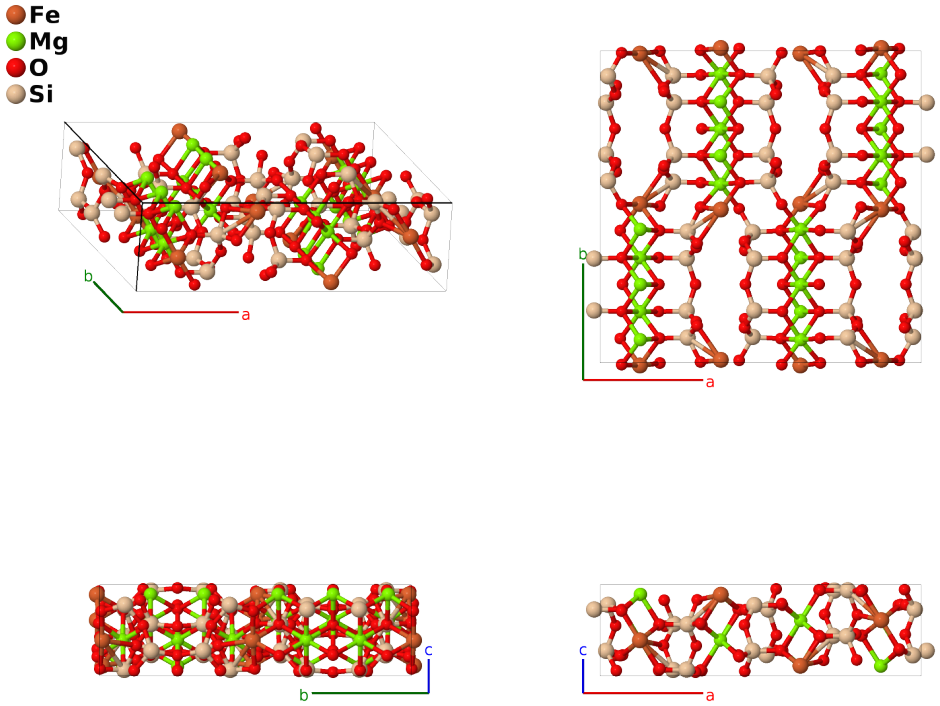
https://aflow.org/p/P9BG

https://aflow.org/p/A2B5C22D2E8_oP156_62_d_c2d_2c10d_2c_4d-001



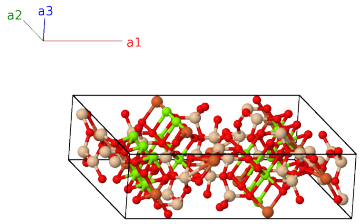
Prototype	$Fe_2Mg_5O_{22}(OH)_2Si_8$
AFLOW prototype label	A2B5C22D2E8_oP156_62_d_c2d_2c10d_2c_4d-001
***Strukturbericht* designation**	$S4_4$
Mineral name	anthophyllite
ICSD	40294
Pearson symbol	oP156
Space group number	62
Space group symbol	*Pnma*
AFLOW prototype command	`aflow --proto=A2B5C22D2E8_oP156_62_d_c2d_2c10d_2c_4d-001 --params=`$a, b/a, c/a, x_1, z_1, x_2, z_2, x_3, z_3, x_4, z_4, x_5, z_5, x_6, y_6, z_6, x_7, y_7, z_7, x_8, y_8, z_8, x_9, y_9, z_9, x_{10}, y_{10}, z_{10}, x_{11}, y_{11}, z_{11}, x_{12}, y_{12}, z_{12}, x_{13}, y_{13}, z_{13}, x_{14}, y_{14}, z_{14}, x_{15}, y_{15}, z_{15}, x_{16}, y_{16}, z_{16}, x_{17}, y_{17}, z_{17}, x_{18}, y_{18}, z_{18}, x_{19}, y_{19}, z_{19}, x_{20}, y_{20}, z_{20}, x_{21}, y_{21}, z_{21}, x_{22}, y_{22}, z_{22}$

Other compounds with this structure
$Mg_7Si_8O_{22}(OH)_2$

- (Warren, 1930) analyzed their sample of anthophyllite under the assumption that it was free of iron, and this structure was given the $S4_4$ designation by (Hermann, 1937).
- (Walitzi, 1989) found a more accurate determination of the structure, but their sample included substantial amounts of iron. The Mg-I (4c) site is actually $(Mg_{0.99}Fe_{0.01})$, Mg-II (8d) is $(Mg_{0.98}Fe_{0.02})$, and Fe (8d) is $(Mg_{0.38}Fe_{0.62})$. Trace amounts of calcium, manganese and sodium were found on the magnesium/iron sites, and trace amounts of aluminum were found on the silicon sites. Neither paper was able to determine the positions of the hydrogen atoms, which are included in the OH radicals.
- The ICSD entry for (Walitzi, 1989) does give positions for the hydrogens, but we can not find any evidence of this in the publication.
- Anthophyllite can be thought of as an approximation to a doubled unit cell of protoanthophyllite, where the hydrogen atoms have been located.

Simple Orthorhombic primitive vectors

$$\begin{aligned}\mathbf{a_1} &= a\,\hat{\mathbf{x}}\\ \mathbf{a_2} &= b\,\hat{\mathbf{y}}\\ \mathbf{a_3} &= c\,\hat{\mathbf{z}}\end{aligned}$$



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	$x_1\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + z_1\,\mathbf{a}_3$	=	$ax_1\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} + cz_1\,\hat{\mathbf{z}}$	(4c)	Mg I
$\mathbf{B_2}$	=	$-\left(x_1 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \left(z_1 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_1 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} + c\left(z_1 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	Mg I
$\mathbf{B_3}$	=	$-x_1\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 - z_1\,\mathbf{a}_3$	=	$-ax_1\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} - cz_1\,\hat{\mathbf{z}}$	(4c)	Mg I
$\mathbf{B_4}$	=	$\left(x_1 + \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 - \left(z_1 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_1 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} - c\left(z_1 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	Mg I
$\mathbf{B_5}$	=	$x_2\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + z_2\,\mathbf{a}_3$	=	$ax_2\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} + cz_2\,\hat{\mathbf{z}}$	(4c)	O I
$\mathbf{B_6}$	=	$-\left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \left(z_2 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_2 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} + c\left(z_2 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	O I
$\mathbf{B_7}$	=	$-x_2\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 - z_2\,\mathbf{a}_3$	=	$-ax_2\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} - cz_2\,\hat{\mathbf{z}}$	(4c)	O I
$\mathbf{B_8}$	=	$\left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 - \left(z_2 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_2 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} - c\left(z_2 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	O I
$\mathbf{B_9}$	=	$x_3\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + z_3\,\mathbf{a}_3$	=	$ax_3\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} + cz_3\,\hat{\mathbf{z}}$	(4c)	O II
$\mathbf{B_{10}}$	=	$-\left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \left(z_3 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} + c\left(z_3 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	O II
$\mathbf{B_{11}}$	=	$-x_3\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 - z_3\,\mathbf{a}_3$	=	$-ax_3\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} - cz_3\,\hat{\mathbf{z}}$	(4c)	O II
$\mathbf{B_{12}}$	=	$\left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 - \left(z_3 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} - c\left(z_3 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	O II
$\mathbf{B_{13}}$	=	$x_4\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$ax_4\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$	(4c)	OH I

$$\mathbf{B_{14}} = -\left(x_4-\tfrac{1}{2}\right)\mathbf{a}_1+\tfrac{3}{4}\mathbf{a}_2+\left(z_4+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_4-\tfrac{1}{2}\right)\hat{\mathbf{x}}+\tfrac{3}{4}b\hat{\mathbf{y}}+c\left(z_4+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4c) \quad \text{OH I}$$

$$\mathbf{B_{15}} = -x_4\mathbf{a}_1+\tfrac{3}{4}\mathbf{a}_2-z_4\mathbf{a}_3 = -ax_4\hat{\mathbf{x}}+\tfrac{3}{4}b\hat{\mathbf{y}}-cz_4\hat{\mathbf{z}} \quad (4c) \quad \text{OH I}$$

$$\mathbf{B_{16}} = \left(x_4+\tfrac{1}{2}\right)\mathbf{a}_1+\tfrac{1}{4}\mathbf{a}_2-\left(z_4-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_4+\tfrac{1}{2}\right)\hat{\mathbf{x}}+\tfrac{1}{4}b\hat{\mathbf{y}}-c\left(z_4-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4c) \quad \text{OH I}$$

$$\mathbf{B_{17}} = x_5\mathbf{a}_1+\tfrac{1}{4}\mathbf{a}_2+z_5\mathbf{a}_3 = ax_5\hat{\mathbf{x}}+\tfrac{1}{4}b\hat{\mathbf{y}}+cz_5\hat{\mathbf{z}} \quad (4c) \quad \text{OH II}$$

$$\mathbf{B_{18}} = -\left(x_5-\tfrac{1}{2}\right)\mathbf{a}_1+\tfrac{3}{4}\mathbf{a}_2+\left(z_5+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_5-\tfrac{1}{2}\right)\hat{\mathbf{x}}+\tfrac{3}{4}b\hat{\mathbf{y}}+c\left(z_5+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4c) \quad \text{OH II}$$

$$\mathbf{B_{19}} = -x_5\mathbf{a}_1+\tfrac{3}{4}\mathbf{a}_2-z_5\mathbf{a}_3 = -ax_5\hat{\mathbf{x}}+\tfrac{3}{4}b\hat{\mathbf{y}}-cz_5\hat{\mathbf{z}} \quad (4c) \quad \text{OH II}$$

$$\mathbf{B_{20}} = \left(x_5+\tfrac{1}{2}\right)\mathbf{a}_1+\tfrac{1}{4}\mathbf{a}_2-\left(z_5-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_5+\tfrac{1}{2}\right)\hat{\mathbf{x}}+\tfrac{1}{4}b\hat{\mathbf{y}}-c\left(z_5-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4c) \quad \text{OH II}$$

$$\mathbf{B_{21}} = x_6\mathbf{a}_1+y_6\mathbf{a}_2+z_6\mathbf{a}_3 = ax_6\hat{\mathbf{x}}+by_6\hat{\mathbf{y}}+cz_6\hat{\mathbf{z}} \quad (8d) \quad \text{Fe I}$$

$$\mathbf{B_{22}} = -\left(x_6-\tfrac{1}{2}\right)\mathbf{a}_1-y_6\mathbf{a}_2+\left(z_6+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_6-\tfrac{1}{2}\right)\hat{\mathbf{x}}-by_6\hat{\mathbf{y}}+c\left(z_6+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Fe I}$$

$$\mathbf{B_{23}} = -x_6\mathbf{a}_1+\left(y_6+\tfrac{1}{2}\right)\mathbf{a}_2-z_6\mathbf{a}_3 = -ax_6\hat{\mathbf{x}}+b\left(y_6+\tfrac{1}{2}\right)\hat{\mathbf{y}}-cz_6\hat{\mathbf{z}} \quad (8d) \quad \text{Fe I}$$

$$\mathbf{B_{24}} = \left(x_6+\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_6-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_6-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_6+\tfrac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_6-\tfrac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_6-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Fe I}$$

$$\mathbf{B_{25}} = -x_6\mathbf{a}_1-y_6\mathbf{a}_2-z_6\mathbf{a}_3 = -ax_6\hat{\mathbf{x}}-by_6\hat{\mathbf{y}}-cz_6\hat{\mathbf{z}} \quad (8d) \quad \text{Fe I}$$

$$\mathbf{B_{26}} = \left(x_6+\tfrac{1}{2}\right)\mathbf{a}_1+y_6\mathbf{a}_2-\left(z_6-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_6+\tfrac{1}{2}\right)\hat{\mathbf{x}}+by_6\hat{\mathbf{y}}-c\left(z_6-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Fe I}$$

$$\mathbf{B_{27}} = x_6\mathbf{a}_1-\left(y_6-\tfrac{1}{2}\right)\mathbf{a}_2+z_6\mathbf{a}_3 = ax_6\hat{\mathbf{x}}-b\left(y_6-\tfrac{1}{2}\right)\hat{\mathbf{y}}+cz_6\hat{\mathbf{z}} \quad (8d) \quad \text{Fe I}$$

$$\mathbf{B_{28}} = -\left(x_6-\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_6+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_6+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_6-\tfrac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_6+\tfrac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_6+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Fe I}$$

$$\mathbf{B_{29}} = x_7\mathbf{a}_1+y_7\mathbf{a}_2+z_7\mathbf{a}_3 = ax_7\hat{\mathbf{x}}+by_7\hat{\mathbf{y}}+cz_7\hat{\mathbf{z}} \quad (8d) \quad \text{Mg II}$$

$$\mathbf{B_{30}} = -\left(x_7-\tfrac{1}{2}\right)\mathbf{a}_1-y_7\mathbf{a}_2+\left(z_7+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_7-\tfrac{1}{2}\right)\hat{\mathbf{x}}-by_7\hat{\mathbf{y}}+c\left(z_7+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Mg II}$$

$$\mathbf{B_{31}} = -x_7\mathbf{a}_1+\left(y_7+\tfrac{1}{2}\right)\mathbf{a}_2-z_7\mathbf{a}_3 = -ax_7\hat{\mathbf{x}}+b\left(y_7+\tfrac{1}{2}\right)\hat{\mathbf{y}}-cz_7\hat{\mathbf{z}} \quad (8d) \quad \text{Mg II}$$

$$\mathbf{B_{32}} = \left(x_7+\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_7-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_7-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_7+\tfrac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_7-\tfrac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_7-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Mg II}$$

$$\mathbf{B_{33}} = -x_7\mathbf{a}_1-y_7\mathbf{a}_2-z_7\mathbf{a}_3 = -ax_7\hat{\mathbf{x}}-by_7\hat{\mathbf{y}}-cz_7\hat{\mathbf{z}} \quad (8d) \quad \text{Mg II}$$

$$\mathbf{B_{34}} = \left(x_7+\tfrac{1}{2}\right)\mathbf{a}_1+y_7\mathbf{a}_2-\left(z_7-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_7+\tfrac{1}{2}\right)\hat{\mathbf{x}}+by_7\hat{\mathbf{y}}-c\left(z_7-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Mg II}$$

$$\mathbf{B_{35}} = x_7\mathbf{a}_1-\left(y_7-\tfrac{1}{2}\right)\mathbf{a}_2+z_7\mathbf{a}_3 = ax_7\hat{\mathbf{x}}-b\left(y_7-\tfrac{1}{2}\right)\hat{\mathbf{y}}+cz_7\hat{\mathbf{z}} \quad (8d) \quad \text{Mg II}$$

$$\mathbf{B_{36}} = -\left(x_7-\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_7+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_7+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_7-\tfrac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_7+\tfrac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_7+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Mg II}$$

$$\mathbf{B_{37}} = x_8\mathbf{a}_1+y_8\mathbf{a}_2+z_8\mathbf{a}_3 = ax_8\hat{\mathbf{x}}+by_8\hat{\mathbf{y}}+cz_8\hat{\mathbf{z}} \quad (8d) \quad \text{Mg III}$$

$$\mathbf{B_{38}} = -\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_1-y_8\mathbf{a}_2+\left(z_8+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_8-\tfrac{1}{2}\right)\hat{\mathbf{x}}-by_8\hat{\mathbf{y}}+c\left(z_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Mg III}$$

$$\mathbf{B_{39}} = -x_8\mathbf{a}_1+\left(y_8+\tfrac{1}{2}\right)\mathbf{a}_2-z_8\mathbf{a}_3 = -ax_8\hat{\mathbf{x}}+b\left(y_8+\tfrac{1}{2}\right)\hat{\mathbf{y}}-cz_8\hat{\mathbf{z}} \quad (8d) \quad \text{Mg III}$$

$$\mathbf{B_{40}} = \left(x_8+\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_8-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_8-\tfrac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_8-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Mg III}$$

$$\mathbf{B_{41}} = -x_8\mathbf{a}_1-y_8\mathbf{a}_2-z_8\mathbf{a}_3 = -ax_8\hat{\mathbf{x}}-by_8\hat{\mathbf{y}}-cz_8\hat{\mathbf{z}} \quad (8d) \quad \text{Mg III}$$

$$\mathbf{B_{42}} = \left(x_8+\tfrac{1}{2}\right)\mathbf{a}_1+y_8\mathbf{a}_2-\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{x}}+by_8\hat{\mathbf{y}}-c\left(z_8-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Mg III}$$

$$\mathbf{B_{43}} = x_8\mathbf{a}_1-\left(y_8-\tfrac{1}{2}\right)\mathbf{a}_2+z_8\mathbf{a}_3 = ax_8\hat{\mathbf{x}}-b\left(y_8-\tfrac{1}{2}\right)\hat{\mathbf{y}}+cz_8\hat{\mathbf{z}} \quad (8d) \quad \text{Mg III}$$

$$\mathbf{B_{44}} = -\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_8+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_8+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_8-\tfrac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_8+\tfrac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Mg III}$$

$$\mathbf{B_{45}} = x_9\mathbf{a}_1+y_9\mathbf{a}_2+z_9\mathbf{a}_3 = ax_9\hat{\mathbf{x}}+by_9\hat{\mathbf{y}}+cz_9\hat{\mathbf{z}} \quad (8d) \quad \text{O III}$$

$$
\begin{array}{lcccccc}
\mathbf{B_{46}} & = & -\left(x_9-\frac{1}{2}\right)\mathbf{a}_1 - y_9\,\mathbf{a}_2 + \left(z_9+\frac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_9-\frac{1}{2}\right)\hat{\mathbf{x}} - by_9\,\hat{\mathbf{y}} + c\left(z_9+\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O III} \\
\mathbf{B_{47}} & = & -x_9\,\mathbf{a}_1 + \left(y_9+\frac{1}{2}\right)\mathbf{a}_2 - z_9\,\mathbf{a}_3 & = & -ax_9\,\hat{\mathbf{x}} + b\left(y_9+\frac{1}{2}\right)\hat{\mathbf{y}} - cz_9\,\hat{\mathbf{z}} & \text{(8d)} & \text{O III} \\
\mathbf{B_{48}} & = & \left(x_9+\frac{1}{2}\right)\mathbf{a}_1 - \left(y_9-\frac{1}{2}\right)\mathbf{a}_2 - \left(z_9-\frac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_9+\frac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_9-\frac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_9-\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O III} \\
\mathbf{B_{49}} & = & -x_9\,\mathbf{a}_1 - y_9\,\mathbf{a}_2 - z_9\,\mathbf{a}_3 & = & -ax_9\,\hat{\mathbf{x}} - by_9\,\hat{\mathbf{y}} - cz_9\,\hat{\mathbf{z}} & \text{(8d)} & \text{O III} \\
\mathbf{B_{50}} & = & \left(x_9+\frac{1}{2}\right)\mathbf{a}_1 + y_9\,\mathbf{a}_2 - \left(z_9-\frac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_9+\frac{1}{2}\right)\hat{\mathbf{x}} + by_9\,\hat{\mathbf{y}} - c\left(z_9-\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O III} \\
\mathbf{B_{51}} & = & x_9\,\mathbf{a}_1 - \left(y_9-\frac{1}{2}\right)\mathbf{a}_2 + z_9\,\mathbf{a}_3 & = & ax_9\,\hat{\mathbf{x}} - b\left(y_9-\frac{1}{2}\right)\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}} & \text{(8d)} & \text{O III} \\
\mathbf{B_{52}} & = & -\left(x_9-\frac{1}{2}\right)\mathbf{a}_1 + \left(y_9+\frac{1}{2}\right)\mathbf{a}_2 + \left(z_9+\frac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_9-\frac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_9+\frac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_9+\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O III} \\
\mathbf{B_{53}} & = & x_{10}\,\mathbf{a}_1 + y_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 & = & ax_{10}\,\hat{\mathbf{x}} + by_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}} & \text{(8d)} & \text{O IV} \\
\mathbf{B_{54}} & = & -\left(x_{10}-\frac{1}{2}\right)\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 + \left(z_{10}+\frac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_{10}-\frac{1}{2}\right)\hat{\mathbf{x}} - by_{10}\,\hat{\mathbf{y}} + c\left(z_{10}+\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O IV} \\
\mathbf{B_{55}} & = & -x_{10}\,\mathbf{a}_1 + \left(y_{10}+\frac{1}{2}\right)\mathbf{a}_2 - z_{10}\,\mathbf{a}_3 & = & -ax_{10}\,\hat{\mathbf{x}} + b\left(y_{10}+\frac{1}{2}\right)\hat{\mathbf{y}} - cz_{10}\,\hat{\mathbf{z}} & \text{(8d)} & \text{O IV} \\
\mathbf{B_{56}} & = & \left(x_{10}+\frac{1}{2}\right)\mathbf{a}_1 - \left(y_{10}-\frac{1}{2}\right)\mathbf{a}_2 - \left(z_{10}-\frac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_{10}+\frac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{10}-\frac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{10}-\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O IV} \\
\mathbf{B_{57}} & = & -x_{10}\,\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 - z_{10}\,\mathbf{a}_3 & = & -ax_{10}\,\hat{\mathbf{x}} - by_{10}\,\hat{\mathbf{y}} - cz_{10}\,\hat{\mathbf{z}} & \text{(8d)} & \text{O IV} \\
\mathbf{B_{58}} & = & \left(x_{10}+\frac{1}{2}\right)\mathbf{a}_1 + y_{10}\,\mathbf{a}_2 - \left(z_{10}-\frac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_{10}+\frac{1}{2}\right)\hat{\mathbf{x}} + by_{10}\,\hat{\mathbf{y}} - c\left(z_{10}-\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O IV} \\
\mathbf{B_{59}} & = & x_{10}\,\mathbf{a}_1 - \left(y_{10}-\frac{1}{2}\right)\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 & = & ax_{10}\,\hat{\mathbf{x}} - b\left(y_{10}-\frac{1}{2}\right)\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}} & \text{(8d)} & \text{O IV} \\
\mathbf{B_{60}} & = & -\left(x_{10}-\frac{1}{2}\right)\mathbf{a}_1 + \left(y_{10}+\frac{1}{2}\right)\mathbf{a}_2 + \left(z_{10}+\frac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_{10}-\frac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{10}+\frac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{10}+\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O IV} \\
\mathbf{B_{61}} & = & x_{11}\,\mathbf{a}_1 + y_{11}\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 & = & ax_{11}\,\hat{\mathbf{x}} + by_{11}\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} & \text{(8d)} & \text{O V} \\
\mathbf{B_{62}} & = & -\left(x_{11}-\frac{1}{2}\right)\mathbf{a}_1 - y_{11}\,\mathbf{a}_2 + \left(z_{11}+\frac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_{11}-\frac{1}{2}\right)\hat{\mathbf{x}} - by_{11}\,\hat{\mathbf{y}} + c\left(z_{11}+\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O V} \\
\mathbf{B_{63}} & = & -x_{11}\,\mathbf{a}_1 + \left(y_{11}+\frac{1}{2}\right)\mathbf{a}_2 - z_{11}\,\mathbf{a}_3 & = & -ax_{11}\,\hat{\mathbf{x}} + b\left(y_{11}+\frac{1}{2}\right)\hat{\mathbf{y}} - cz_{11}\,\hat{\mathbf{z}} & \text{(8d)} & \text{O V} \\
\mathbf{B_{64}} & = & \left(x_{11}+\frac{1}{2}\right)\mathbf{a}_1 - \left(y_{11}-\frac{1}{2}\right)\mathbf{a}_2 - \left(z_{11}-\frac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_{11}+\frac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{11}-\frac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{11}-\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O V} \\
\mathbf{B_{65}} & = & -x_{11}\,\mathbf{a}_1 - y_{11}\,\mathbf{a}_2 - z_{11}\,\mathbf{a}_3 & = & -ax_{11}\,\hat{\mathbf{x}} - by_{11}\,\hat{\mathbf{y}} - cz_{11}\,\hat{\mathbf{z}} & \text{(8d)} & \text{O V} \\
\mathbf{B_{66}} & = & \left(x_{11}+\frac{1}{2}\right)\mathbf{a}_1 + y_{11}\,\mathbf{a}_2 - \left(z_{11}-\frac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_{11}+\frac{1}{2}\right)\hat{\mathbf{x}} + by_{11}\,\hat{\mathbf{y}} - c\left(z_{11}-\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O V} \\
\mathbf{B_{67}} & = & x_{11}\,\mathbf{a}_1 - \left(y_{11}-\frac{1}{2}\right)\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 & = & ax_{11}\,\hat{\mathbf{x}} - b\left(y_{11}-\frac{1}{2}\right)\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} & \text{(8d)} & \text{O V} \\
\mathbf{B_{68}} & = & -\left(x_{11}-\frac{1}{2}\right)\mathbf{a}_1 + \left(y_{11}+\frac{1}{2}\right)\mathbf{a}_2 + \left(z_{11}+\frac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_{11}-\frac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{11}+\frac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{11}+\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O V} \\
\mathbf{B_{69}} & = & x_{12}\,\mathbf{a}_1 + y_{12}\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 & = & ax_{12}\,\hat{\mathbf{x}} + by_{12}\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} & \text{(8d)} & \text{O VI} \\
\mathbf{B_{70}} & = & -\left(x_{12}-\frac{1}{2}\right)\mathbf{a}_1 - y_{12}\,\mathbf{a}_2 + \left(z_{12}+\frac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_{12}-\frac{1}{2}\right)\hat{\mathbf{x}} - by_{12}\,\hat{\mathbf{y}} + c\left(z_{12}+\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O VI} \\
\mathbf{B_{71}} & = & -x_{12}\,\mathbf{a}_1 + \left(y_{12}+\frac{1}{2}\right)\mathbf{a}_2 - z_{12}\,\mathbf{a}_3 & = & -ax_{12}\,\hat{\mathbf{x}} + b\left(y_{12}+\frac{1}{2}\right)\hat{\mathbf{y}} - cz_{12}\,\hat{\mathbf{z}} & \text{(8d)} & \text{O VI} \\
\mathbf{B_{72}} & = & \left(x_{12}+\frac{1}{2}\right)\mathbf{a}_1 - \left(y_{12}-\frac{1}{2}\right)\mathbf{a}_2 - \left(z_{12}-\frac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_{12}+\frac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{12}-\frac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{12}-\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O VI} \\
\mathbf{B_{73}} & = & -x_{12}\,\mathbf{a}_1 - y_{12}\,\mathbf{a}_2 - z_{12}\,\mathbf{a}_3 & = & -ax_{12}\,\hat{\mathbf{x}} - by_{12}\,\hat{\mathbf{y}} - cz_{12}\,\hat{\mathbf{z}} & \text{(8d)} & \text{O VI} \\
\mathbf{B_{74}} & = & \left(x_{12}+\frac{1}{2}\right)\mathbf{a}_1 + y_{12}\,\mathbf{a}_2 - \left(z_{12}-\frac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_{12}+\frac{1}{2}\right)\hat{\mathbf{x}} + by_{12}\,\hat{\mathbf{y}} - c\left(z_{12}-\frac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{O VI} \\
\mathbf{B_{75}} & = & x_{12}\,\mathbf{a}_1 - \left(y_{12}-\frac{1}{2}\right)\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 & = & ax_{12}\,\hat{\mathbf{x}} - b\left(y_{12}-\frac{1}{2}\right)\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} & \text{(8d)} & \text{O VI}
\end{array}
$$

$\mathbf{B_{76}}$	=	$-\left(x_{12}-\frac{1}{2}\right)\mathbf{a}_1+\left(y_{12}+\frac{1}{2}\right)\mathbf{a}_2+\left(z_{12}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{12}-\frac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_{12}+\frac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_{12}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O VI
$\mathbf{B_{77}}$	=	$x_{13}\,\mathbf{a}_1+y_{13}\,\mathbf{a}_2+z_{13}\,\mathbf{a}_3$	=	$ax_{13}\,\hat{\mathbf{x}}+by_{13}\,\hat{\mathbf{y}}+cz_{13}\,\hat{\mathbf{z}}$	(8d)	O VII
$\mathbf{B_{78}}$	=	$-\left(x_{13}-\frac{1}{2}\right)\mathbf{a}_1-y_{13}\,\mathbf{a}_2+\left(z_{13}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{13}-\frac{1}{2}\right)\hat{\mathbf{x}}-by_{13}\,\hat{\mathbf{y}}+c\left(z_{13}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O VII
$\mathbf{B_{79}}$	=	$-x_{13}\,\mathbf{a}_1+\left(y_{13}+\frac{1}{2}\right)\mathbf{a}_2-z_{13}\,\mathbf{a}_3$	=	$-ax_{13}\,\hat{\mathbf{x}}+b\left(y_{13}+\frac{1}{2}\right)\hat{\mathbf{y}}-cz_{13}\,\hat{\mathbf{z}}$	(8d)	O VII
$\mathbf{B_{80}}$	=	$\left(x_{13}+\frac{1}{2}\right)\mathbf{a}_1-\left(y_{13}-\frac{1}{2}\right)\mathbf{a}_2-\left(z_{13}-\frac{1}{2}\right)\mathbf{a}_3$	=	$a\left(x_{13}+\frac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{13}-\frac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{13}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O VII
$\mathbf{B_{81}}$	=	$-x_{13}\,\mathbf{a}_1-y_{13}\,\mathbf{a}_2-z_{13}\,\mathbf{a}_3$	=	$-ax_{13}\,\hat{\mathbf{x}}-by_{13}\,\hat{\mathbf{y}}-cz_{13}\,\hat{\mathbf{z}}$	(8d)	O VII
$\mathbf{B_{82}}$	=	$\left(x_{13}+\frac{1}{2}\right)\mathbf{a}_1+y_{13}\,\mathbf{a}_2-\left(z_{13}-\frac{1}{2}\right)\mathbf{a}_3$	=	$a\left(x_{13}+\frac{1}{2}\right)\hat{\mathbf{x}}+by_{13}\,\hat{\mathbf{y}}-c\left(z_{13}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O VII
$\mathbf{B_{83}}$	=	$x_{13}\,\mathbf{a}_1-\left(y_{13}-\frac{1}{2}\right)\mathbf{a}_2+z_{13}\,\mathbf{a}_3$	=	$ax_{13}\,\hat{\mathbf{x}}-b\left(y_{13}-\frac{1}{2}\right)\hat{\mathbf{y}}+cz_{13}\,\hat{\mathbf{z}}$	(8d)	O VII
$\mathbf{B_{84}}$	=	$-\left(x_{13}-\frac{1}{2}\right)\mathbf{a}_1+\left(y_{13}+\frac{1}{2}\right)\mathbf{a}_2+\left(z_{13}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{13}-\frac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_{13}+\frac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_{13}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O VII
$\mathbf{B_{85}}$	=	$x_{14}\,\mathbf{a}_1+y_{14}\,\mathbf{a}_2+z_{14}\,\mathbf{a}_3$	=	$ax_{14}\,\hat{\mathbf{x}}+by_{14}\,\hat{\mathbf{y}}+cz_{14}\,\hat{\mathbf{z}}$	(8d)	O VIII
$\mathbf{B_{86}}$	=	$-\left(x_{14}-\frac{1}{2}\right)\mathbf{a}_1-y_{14}\,\mathbf{a}_2+\left(z_{14}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{14}-\frac{1}{2}\right)\hat{\mathbf{x}}-by_{14}\,\hat{\mathbf{y}}+c\left(z_{14}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O VIII
$\mathbf{B_{87}}$	=	$-x_{14}\,\mathbf{a}_1+\left(y_{14}+\frac{1}{2}\right)\mathbf{a}_2-z_{14}\,\mathbf{a}_3$	=	$-ax_{14}\,\hat{\mathbf{x}}+b\left(y_{14}+\frac{1}{2}\right)\hat{\mathbf{y}}-cz_{14}\,\hat{\mathbf{z}}$	(8d)	O VIII
$\mathbf{B_{88}}$	=	$\left(x_{14}+\frac{1}{2}\right)\mathbf{a}_1-\left(y_{14}-\frac{1}{2}\right)\mathbf{a}_2-\left(z_{14}-\frac{1}{2}\right)\mathbf{a}_3$	=	$a\left(x_{14}+\frac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{14}-\frac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{14}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O VIII
$\mathbf{B_{89}}$	=	$-x_{14}\,\mathbf{a}_1-y_{14}\,\mathbf{a}_2-z_{14}\,\mathbf{a}_3$	=	$-ax_{14}\,\hat{\mathbf{x}}-by_{14}\,\hat{\mathbf{y}}-cz_{14}\,\hat{\mathbf{z}}$	(8d)	O VIII
$\mathbf{B_{90}}$	=	$\left(x_{14}+\frac{1}{2}\right)\mathbf{a}_1+y_{14}\,\mathbf{a}_2-\left(z_{14}-\frac{1}{2}\right)\mathbf{a}_3$	=	$a\left(x_{14}+\frac{1}{2}\right)\hat{\mathbf{x}}+by_{14}\,\hat{\mathbf{y}}-c\left(z_{14}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O VIII
$\mathbf{B_{91}}$	=	$x_{14}\,\mathbf{a}_1-\left(y_{14}-\frac{1}{2}\right)\mathbf{a}_2+z_{14}\,\mathbf{a}_3$	=	$ax_{14}\,\hat{\mathbf{x}}-b\left(y_{14}-\frac{1}{2}\right)\hat{\mathbf{y}}+cz_{14}\,\hat{\mathbf{z}}$	(8d)	O VIII
$\mathbf{B_{92}}$	=	$-\left(x_{14}-\frac{1}{2}\right)\mathbf{a}_1+\left(y_{14}+\frac{1}{2}\right)\mathbf{a}_2+\left(z_{14}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{14}-\frac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_{14}+\frac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_{14}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O VIII
$\mathbf{B_{93}}$	=	$x_{15}\,\mathbf{a}_1+y_{15}\,\mathbf{a}_2+z_{15}\,\mathbf{a}_3$	=	$ax_{15}\,\hat{\mathbf{x}}+by_{15}\,\hat{\mathbf{y}}+cz_{15}\,\hat{\mathbf{z}}$	(8d)	O IX
$\mathbf{B_{94}}$	=	$-\left(x_{15}-\frac{1}{2}\right)\mathbf{a}_1-y_{15}\,\mathbf{a}_2+\left(z_{15}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{15}-\frac{1}{2}\right)\hat{\mathbf{x}}-by_{15}\,\hat{\mathbf{y}}+c\left(z_{15}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O IX
$\mathbf{B_{95}}$	=	$-x_{15}\,\mathbf{a}_1+\left(y_{15}+\frac{1}{2}\right)\mathbf{a}_2-z_{15}\,\mathbf{a}_3$	=	$-ax_{15}\,\hat{\mathbf{x}}+b\left(y_{15}+\frac{1}{2}\right)\hat{\mathbf{y}}-cz_{15}\,\hat{\mathbf{z}}$	(8d)	O IX
$\mathbf{B_{96}}$	=	$\left(x_{15}+\frac{1}{2}\right)\mathbf{a}_1-\left(y_{15}-\frac{1}{2}\right)\mathbf{a}_2-\left(z_{15}-\frac{1}{2}\right)\mathbf{a}_3$	=	$a\left(x_{15}+\frac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{15}-\frac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{15}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O IX
$\mathbf{B_{97}}$	=	$-x_{15}\,\mathbf{a}_1-y_{15}\,\mathbf{a}_2-z_{15}\,\mathbf{a}_3$	=	$-ax_{15}\,\hat{\mathbf{x}}-by_{15}\,\hat{\mathbf{y}}-cz_{15}\,\hat{\mathbf{z}}$	(8d)	O IX
$\mathbf{B_{98}}$	=	$\left(x_{15}+\frac{1}{2}\right)\mathbf{a}_1+y_{15}\,\mathbf{a}_2-\left(z_{15}-\frac{1}{2}\right)\mathbf{a}_3$	=	$a\left(x_{15}+\frac{1}{2}\right)\hat{\mathbf{x}}+by_{15}\,\hat{\mathbf{y}}-c\left(z_{15}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O IX
$\mathbf{B_{99}}$	=	$x_{15}\,\mathbf{a}_1-\left(y_{15}-\frac{1}{2}\right)\mathbf{a}_2+z_{15}\,\mathbf{a}_3$	=	$ax_{15}\,\hat{\mathbf{x}}-b\left(y_{15}-\frac{1}{2}\right)\hat{\mathbf{y}}+cz_{15}\,\hat{\mathbf{z}}$	(8d)	O IX
$\mathbf{B_{100}}$	=	$-\left(x_{15}-\frac{1}{2}\right)\mathbf{a}_1+\left(y_{15}+\frac{1}{2}\right)\mathbf{a}_2+\left(z_{15}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{15}-\frac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_{15}+\frac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_{15}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O IX
$\mathbf{B_{101}}$	=	$x_{16}\,\mathbf{a}_1+y_{16}\,\mathbf{a}_2+z_{16}\,\mathbf{a}_3$	=	$ax_{16}\,\hat{\mathbf{x}}+by_{16}\,\hat{\mathbf{y}}+cz_{16}\,\hat{\mathbf{z}}$	(8d)	O X
$\mathbf{B_{102}}$	=	$-\left(x_{16}-\frac{1}{2}\right)\mathbf{a}_1-y_{16}\,\mathbf{a}_2+\left(z_{16}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{16}-\frac{1}{2}\right)\hat{\mathbf{x}}-by_{16}\,\hat{\mathbf{y}}+c\left(z_{16}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O X
$\mathbf{B_{103}}$	=	$-x_{16}\,\mathbf{a}_1+\left(y_{16}+\frac{1}{2}\right)\mathbf{a}_2-z_{16}\,\mathbf{a}_3$	=	$-ax_{16}\,\hat{\mathbf{x}}+b\left(y_{16}+\frac{1}{2}\right)\hat{\mathbf{y}}-cz_{16}\,\hat{\mathbf{z}}$	(8d)	O X
$\mathbf{B_{104}}$	=	$\left(x_{16}+\frac{1}{2}\right)\mathbf{a}_1-\left(y_{16}-\frac{1}{2}\right)\mathbf{a}_2-\left(z_{16}-\frac{1}{2}\right)\mathbf{a}_3$	=	$a\left(x_{16}+\frac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{16}-\frac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{16}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(8d)	O X
$\mathbf{B_{105}}$	=	$-x_{16}\,\mathbf{a}_1-y_{16}\,\mathbf{a}_2-z_{16}\,\mathbf{a}_3$	=	$-ax_{16}\,\hat{\mathbf{x}}-by_{16}\,\hat{\mathbf{y}}-cz_{16}\,\hat{\mathbf{z}}$	(8d)	O X

$$\mathbf{B_{106}} = \left(x_{16}+\tfrac{1}{2}\right)\mathbf{a}_1 + y_{16}\,\mathbf{a}_2 - \left(z_{16}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{16}+\tfrac{1}{2}\right)\hat{\mathbf{x}} + by_{16}\,\hat{\mathbf{y}} - c\left(z_{16}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O X}$$

$$\mathbf{B_{107}} = x_{16}\,\mathbf{a}_1 - \left(y_{16}-\tfrac{1}{2}\right)\mathbf{a}_2 + z_{16}\,\mathbf{a}_3 = ax_{16}\,\hat{\mathbf{x}} - b\left(y_{16}-\tfrac{1}{2}\right)\hat{\mathbf{y}} + cz_{16}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O X}$$

$$\mathbf{B_{108}} = -\left(x_{16}-\tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_{16}+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_{16}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{16}-\tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{16}+\tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{16}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O X}$$

$$\mathbf{B_{109}} = x_{17}\,\mathbf{a}_1 + y_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3 = ax_{17}\,\hat{\mathbf{x}} + by_{17}\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XI}$$

$$\mathbf{B_{110}} = -\left(x_{17}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{17}\,\mathbf{a}_2 + \left(z_{17}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{17}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{17}\,\hat{\mathbf{y}} + c\left(z_{17}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XI}$$

$$\mathbf{B_{111}} = -x_{17}\,\mathbf{a}_1 + \left(y_{17}+\tfrac{1}{2}\right)\mathbf{a}_2 - z_{17}\,\mathbf{a}_3 = -ax_{17}\,\hat{\mathbf{x}} + b\left(y_{17}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{17}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XI}$$

$$\mathbf{B_{112}} = \left(x_{17}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{17}-\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{17}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{17}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{17}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{17}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XI}$$

$$\mathbf{B_{113}} = -x_{17}\,\mathbf{a}_1 - y_{17}\,\mathbf{a}_2 - z_{17}\,\mathbf{a}_3 = -ax_{17}\,\hat{\mathbf{x}} - by_{17}\,\hat{\mathbf{y}} - cz_{17}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XI}$$

$$\mathbf{B_{114}} = \left(x_{17}+\tfrac{1}{2}\right)\mathbf{a}_1 + y_{17}\,\mathbf{a}_2 - \left(z_{17}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{17}+\tfrac{1}{2}\right)\hat{\mathbf{x}} + by_{17}\,\hat{\mathbf{y}} - c\left(z_{17}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XI}$$

$$\mathbf{B_{115}} = x_{17}\,\mathbf{a}_1 - \left(y_{17}-\tfrac{1}{2}\right)\mathbf{a}_2 + z_{17}\,\mathbf{a}_3 = ax_{17}\,\hat{\mathbf{x}} - b\left(y_{17}-\tfrac{1}{2}\right)\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XI}$$

$$\mathbf{B_{116}} = -\left(x_{17}-\tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_{17}+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_{17}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{17}-\tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{17}+\tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{17}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XI}$$

$$\mathbf{B_{117}} = x_{18}\,\mathbf{a}_1 + y_{18}\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3 = ax_{18}\,\hat{\mathbf{x}} + by_{18}\,\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XII}$$

$$\mathbf{B_{118}} = -\left(x_{18}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{18}\,\mathbf{a}_2 + \left(z_{18}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{18}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{18}\,\hat{\mathbf{y}} + c\left(z_{18}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XII}$$

$$\mathbf{B_{119}} = -x_{18}\,\mathbf{a}_1 + \left(y_{18}+\tfrac{1}{2}\right)\mathbf{a}_2 - z_{18}\,\mathbf{a}_3 = -ax_{18}\,\hat{\mathbf{x}} + b\left(y_{18}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{18}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XII}$$

$$\mathbf{B_{120}} = \left(x_{18}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{18}-\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{18}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{18}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{18}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{18}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XII}$$

$$\mathbf{B_{121}} = -x_{18}\,\mathbf{a}_1 - y_{18}\,\mathbf{a}_2 - z_{18}\,\mathbf{a}_3 = -ax_{18}\,\hat{\mathbf{x}} - by_{18}\,\hat{\mathbf{y}} - cz_{18}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XII}$$

$$\mathbf{B_{122}} = \left(x_{18}+\tfrac{1}{2}\right)\mathbf{a}_1 + y_{18}\,\mathbf{a}_2 - \left(z_{18}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{18}+\tfrac{1}{2}\right)\hat{\mathbf{x}} + by_{18}\,\hat{\mathbf{y}} - c\left(z_{18}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XII}$$

$$\mathbf{B_{123}} = x_{18}\,\mathbf{a}_1 - \left(y_{18}-\tfrac{1}{2}\right)\mathbf{a}_2 + z_{18}\,\mathbf{a}_3 = ax_{18}\,\hat{\mathbf{x}} - b\left(y_{18}-\tfrac{1}{2}\right)\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XII}$$

$$\mathbf{B_{124}} = -\left(x_{18}-\tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_{18}+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_{18}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{18}-\tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{18}+\tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{18}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{O XII}$$

$$\mathbf{B_{125}} = x_{19}\,\mathbf{a}_1 + y_{19}\,\mathbf{a}_2 + z_{19}\,\mathbf{a}_3 = ax_{19}\,\hat{\mathbf{x}} + by_{19}\,\hat{\mathbf{y}} + cz_{19}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{Si I}$$

$$\mathbf{B_{126}} = -\left(x_{19}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{19}\,\mathbf{a}_2 + \left(z_{19}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{19}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{19}\,\hat{\mathbf{y}} + c\left(z_{19}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{Si I}$$

$$\mathbf{B_{127}} = -x_{19}\,\mathbf{a}_1 + \left(y_{19}+\tfrac{1}{2}\right)\mathbf{a}_2 - z_{19}\,\mathbf{a}_3 = -ax_{19}\,\hat{\mathbf{x}} + b\left(y_{19}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{19}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{Si I}$$

$$\mathbf{B_{128}} = \left(x_{19}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{19}-\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{19}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{19}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{19}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{19}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{Si I}$$

$$\mathbf{B_{129}} = -x_{19}\,\mathbf{a}_1 - y_{19}\,\mathbf{a}_2 - z_{19}\,\mathbf{a}_3 = -ax_{19}\,\hat{\mathbf{x}} - by_{19}\,\hat{\mathbf{y}} - cz_{19}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{Si I}$$

$$\mathbf{B_{130}} = \left(x_{19}+\tfrac{1}{2}\right)\mathbf{a}_1 + y_{19}\,\mathbf{a}_2 - \left(z_{19}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{19}+\tfrac{1}{2}\right)\hat{\mathbf{x}} + by_{19}\,\hat{\mathbf{y}} - c\left(z_{19}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{Si I}$$

$$\mathbf{B_{131}} = x_{19}\,\mathbf{a}_1 - \left(y_{19}-\tfrac{1}{2}\right)\mathbf{a}_2 + z_{19}\,\mathbf{a}_3 = ax_{19}\,\hat{\mathbf{x}} - b\left(y_{19}-\tfrac{1}{2}\right)\hat{\mathbf{y}} + cz_{19}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{Si I}$$

$$\mathbf{B_{132}} = -\left(x_{19}-\tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_{19}+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_{19}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{19}-\tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{19}+\tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{19}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{Si I}$$

$$\mathbf{B_{133}} = x_{20}\,\mathbf{a}_1 + y_{20}\,\mathbf{a}_2 + z_{20}\,\mathbf{a}_3 = ax_{20}\,\hat{\mathbf{x}} + by_{20}\,\hat{\mathbf{y}} + cz_{20}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{Si II}$$

$$\mathbf{B_{134}} = -\left(x_{20}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{20}\,\mathbf{a}_2 + \left(z_{20}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{20}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{20}\,\hat{\mathbf{y}} + c\left(z_{20}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{Si II}$$

$$\mathbf{B_{135}} = -x_{20}\,\mathbf{a}_1 + \left(y_{20}+\tfrac{1}{2}\right)\mathbf{a}_2 - z_{20}\,\mathbf{a}_3 = -ax_{20}\,\hat{\mathbf{x}} + b\left(y_{20}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{20}\,\hat{\mathbf{z}} \quad \text{(8d)} \quad \text{Si II}$$

$$\mathbf{B_{136}} = \left(x_{20}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{20}-\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{20}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{20}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{20}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{20}-\tfrac{1}{2}\right)\hat{\mathbf{z}}$$ (8d) Si II

$$\mathbf{B_{137}} = -x_{20}\mathbf{a}_1 - y_{20}\mathbf{a}_2 - z_{20}\mathbf{a}_3 = -ax_{20}\hat{\mathbf{x}} - by_{20}\hat{\mathbf{y}} - cz_{20}\hat{\mathbf{z}}$$ (8d) Si II

$$\mathbf{B_{138}} = \left(x_{20}+\tfrac{1}{2}\right)\mathbf{a}_1 + y_{20}\mathbf{a}_2 - \left(z_{20}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{20}+\tfrac{1}{2}\right)\hat{\mathbf{x}} + by_{20}\hat{\mathbf{y}} - c\left(z_{20}-\tfrac{1}{2}\right)\hat{\mathbf{z}}$$ (8d) Si II

$$\mathbf{B_{139}} = x_{20}\mathbf{a}_1 - \left(y_{20}-\tfrac{1}{2}\right)\mathbf{a}_2 + z_{20}\mathbf{a}_3 = ax_{20}\hat{\mathbf{x}} - b\left(y_{20}-\tfrac{1}{2}\right)\hat{\mathbf{y}} + cz_{20}\hat{\mathbf{z}}$$ (8d) Si II

$$\mathbf{B_{140}} = -\left(x_{20}-\tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_{20}+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_{20}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{20}-\tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{20}+\tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{20}+\tfrac{1}{2}\right)\hat{\mathbf{z}}$$ (8d) Si II

$$\mathbf{B_{141}} = x_{21}\mathbf{a}_1 + y_{21}\mathbf{a}_2 + z_{21}\mathbf{a}_3 = ax_{21}\hat{\mathbf{x}} + by_{21}\hat{\mathbf{y}} + cz_{21}\hat{\mathbf{z}}$$ (8d) Si III

$$\mathbf{B_{142}} = -\left(x_{21}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{21}\mathbf{a}_2 + \left(z_{21}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{21}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{21}\hat{\mathbf{y}} + c\left(z_{21}+\tfrac{1}{2}\right)\hat{\mathbf{z}}$$ (8d) Si III

$$\mathbf{B_{143}} = -x_{21}\mathbf{a}_1 + \left(y_{21}+\tfrac{1}{2}\right)\mathbf{a}_2 - z_{21}\mathbf{a}_3 = -ax_{21}\hat{\mathbf{x}} + b\left(y_{21}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{21}\hat{\mathbf{z}}$$ (8d) Si III

$$\mathbf{B_{144}} = \left(x_{21}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{21}-\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{21}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{21}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{21}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{21}-\tfrac{1}{2}\right)\hat{\mathbf{z}}$$ (8d) Si III

$$\mathbf{B_{145}} = -x_{21}\mathbf{a}_1 - y_{21}\mathbf{a}_2 - z_{21}\mathbf{a}_3 = -ax_{21}\hat{\mathbf{x}} - by_{21}\hat{\mathbf{y}} - cz_{21}\hat{\mathbf{z}}$$ (8d) Si III

$$\mathbf{B_{146}} = \left(x_{21}+\tfrac{1}{2}\right)\mathbf{a}_1 + y_{21}\mathbf{a}_2 - \left(z_{21}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{21}+\tfrac{1}{2}\right)\hat{\mathbf{x}} + by_{21}\hat{\mathbf{y}} - c\left(z_{21}-\tfrac{1}{2}\right)\hat{\mathbf{z}}$$ (8d) Si III

$$\mathbf{B_{147}} = x_{21}\mathbf{a}_1 - \left(y_{21}-\tfrac{1}{2}\right)\mathbf{a}_2 + z_{21}\mathbf{a}_3 = ax_{21}\hat{\mathbf{x}} - b\left(y_{21}-\tfrac{1}{2}\right)\hat{\mathbf{y}} + cz_{21}\hat{\mathbf{z}}$$ (8d) Si III

$$\mathbf{B_{148}} = -\left(x_{21}-\tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_{21}+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_{21}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{21}-\tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{21}+\tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{21}+\tfrac{1}{2}\right)\hat{\mathbf{z}}$$ (8d) Si III

$$\mathbf{B_{149}} = x_{22}\mathbf{a}_1 + y_{22}\mathbf{a}_2 + z_{22}\mathbf{a}_3 = ax_{22}\hat{\mathbf{x}} + by_{22}\hat{\mathbf{y}} + cz_{22}\hat{\mathbf{z}}$$ (8d) Si IV

$$\mathbf{B_{150}} = -\left(x_{22}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{22}\mathbf{a}_2 + \left(z_{22}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{22}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{22}\hat{\mathbf{y}} + c\left(z_{22}+\tfrac{1}{2}\right)\hat{\mathbf{z}}$$ (8d) Si IV

$$\mathbf{B_{151}} = -x_{22}\mathbf{a}_1 + \left(y_{22}+\tfrac{1}{2}\right)\mathbf{a}_2 - z_{22}\mathbf{a}_3 = -ax_{22}\hat{\mathbf{x}} + b\left(y_{22}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{22}\hat{\mathbf{z}}$$ (8d) Si IV

$$\mathbf{B_{152}} = \left(x_{22}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{22}-\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{22}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{22}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{22}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{22}-\tfrac{1}{2}\right)\hat{\mathbf{z}}$$ (8d) Si IV

$$\mathbf{B_{153}} = -x_{22}\mathbf{a}_1 - y_{22}\mathbf{a}_2 - z_{22}\mathbf{a}_3 = -ax_{22}\hat{\mathbf{x}} - by_{22}\hat{\mathbf{y}} - cz_{22}\hat{\mathbf{z}}$$ (8d) Si IV

$$\mathbf{B_{154}} = \left(x_{22}+\tfrac{1}{2}\right)\mathbf{a}_1 + y_{22}\mathbf{a}_2 - \left(z_{22}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{22}+\tfrac{1}{2}\right)\hat{\mathbf{x}} + by_{22}\hat{\mathbf{y}} - c\left(z_{22}-\tfrac{1}{2}\right)\hat{\mathbf{z}}$$ (8d) Si IV

$$\mathbf{B_{155}} = x_{22}\mathbf{a}_1 - \left(y_{22}-\tfrac{1}{2}\right)\mathbf{a}_2 + z_{22}\mathbf{a}_3 = ax_{22}\hat{\mathbf{x}} - b\left(y_{22}-\tfrac{1}{2}\right)\hat{\mathbf{y}} + cz_{22}\hat{\mathbf{z}}$$ (8d) Si IV

$$\mathbf{B_{156}} = -\left(x_{22}-\tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_{22}+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_{22}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{22}-\tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{22}+\tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{22}+\tfrac{1}{2}\right)\hat{\mathbf{z}}$$ (8d) Si IV

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