Morenosite ($NiSO_4{\cdot}7H_2O$, $H4_{12}$) Structure: A14BC11D_oP108_19_14a_a_11a_a-001

This structure originally had the label `A14BC11D_oP108_19_14a_a_11a_a`. Calls to that address will be redirected here.

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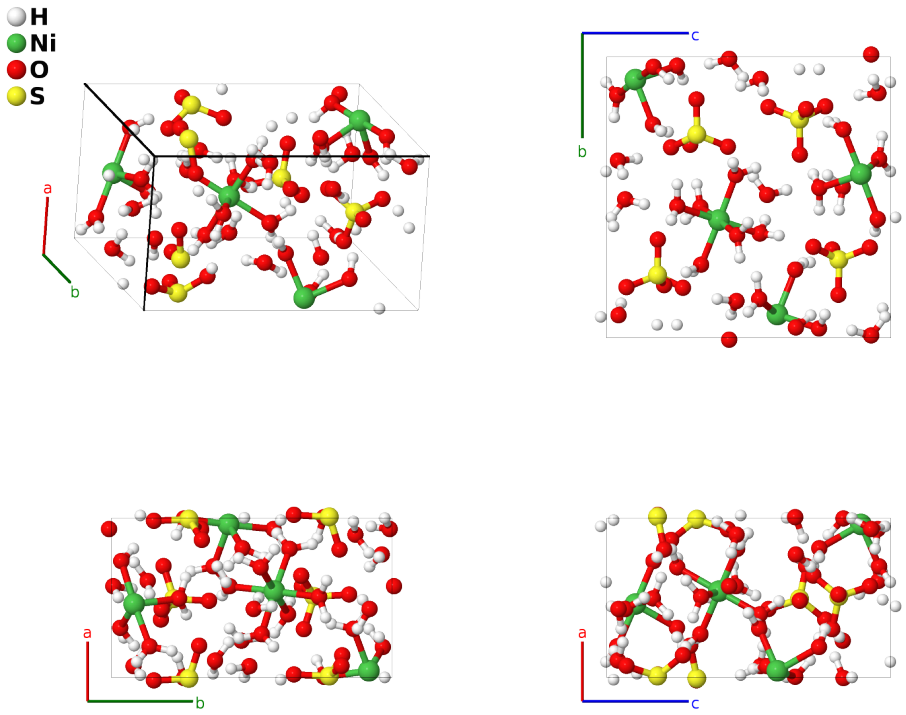
https://aflow.org/p/S9KY

https://aflow.org/p/A14BC11D_oP108_19_14a_a_11a_a-001



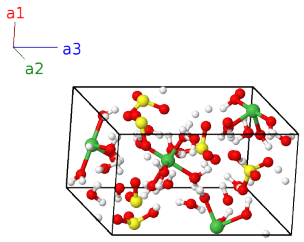
Prototype	$H_{14}NiO_{11}S$
AFLOW prototype label	A14BC11D_oP108_19_14a_a_11a_a-001
***Strukturbericht* designation**	$H4_{12}$
Mineral name	morenosite
ICSD	84569
Pearson symbol	oP108
Space group number	19
Space group symbol	$P2_12_12_1$
AFLOW prototype command	`aflow --proto=A14BC11D_oP108_19_14a_a_11a_a-001 --params=`$a, b/a, c/a, x_1, y_1, z_1, x_2, y_2, z_2, x_3, y_3, z_3, x_4, y_4, z_4, x_5, y_5, z_5, x_6, y_6, z_6, x_7, y_7, z_7, x_8, y_8, z_8, x_9, y_9, z_9, x_{10}, y_{10}, z_{10}, x_{11}, y_{11}, z_{11}, x_{12}, y_{12}, z_{12}, x_{13}, y_{13}, z_{13}, x_{14}, y_{14}, z_{14}, x_{15}, y_{15}, z_{15}, x_{16}, y_{16}, z_{16}, x_{17}, y_{17}, z_{17}, x_{18}, y_{18}, z_{18}, x_{19}, y_{19}, z_{19}, x_{20}, y_{20}, z_{20}, x_{21}, y_{21}, z_{21}, x_{22}, y_{22}, z_{22}, x_{23}, y_{23}, z_{23}, x_{24}, y_{24}, z_{24}, x_{25}, y_{25}, z_{25}, x_{26}, y_{26}, z_{26}, x_{27}, y_{27}, z_{27}$

Other compounds with this structure
$MgSO_4{\cdot}7H_2O$ (Epsomite), $ZnSO_4{\cdot}7H_2O$ (Gosalrite)

- We use the structure from the 25K neutron data taken by (Ptasiewicz-Bak, 1997).

Simple Orthorhombic primitive vectors

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



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	$x_1\,\mathbf{a}_1 + y_1\,\mathbf{a}_2 + z_1\,\mathbf{a}_3$	=	$ax_1\,\hat{\mathbf{x}} + by_1\,\hat{\mathbf{y}} + cz_1\,\hat{\mathbf{z}}$	(4a)	H I
$\mathbf{B_2}$	=	$-\left(x_1-\frac{1}{2}\right)\,\mathbf{a}_1 - y_1\,\mathbf{a}_2 + \left(z_1+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_1-\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_1\,\hat{\mathbf{y}} + c\left(z_1+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	H I
$\mathbf{B_3}$	=	$-x_1\,\mathbf{a}_1 + \left(y_1+\frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_1-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_1\,\hat{\mathbf{x}} + b\left(y_1+\frac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_1-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	H I
$\mathbf{B_4}$	=	$\left(x_1+\frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_1-\frac{1}{2}\right)\,\mathbf{a}_2 - z_1\,\mathbf{a}_3$	=	$a\left(x_1+\frac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_1-\frac{1}{2}\right)\,\hat{\mathbf{y}} - cz_1\,\hat{\mathbf{z}}$	(4a)	H I
$\mathbf{B_5}$	=	$x_2\,\mathbf{a}_1 + y_2\,\mathbf{a}_2 + z_2\,\mathbf{a}_3$	=	$ax_2\,\hat{\mathbf{x}} + by_2\,\hat{\mathbf{y}} + cz_2\,\hat{\mathbf{z}}$	(4a)	H II
$\mathbf{B_6}$	=	$-\left(x_2-\frac{1}{2}\right)\,\mathbf{a}_1 - y_2\,\mathbf{a}_2 + \left(z_2+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_2-\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_2\,\hat{\mathbf{y}} + c\left(z_2+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	H II
$\mathbf{B_7}$	=	$-x_2\,\mathbf{a}_1 + \left(y_2+\frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_2-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_2\,\hat{\mathbf{x}} + b\left(y_2+\frac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_2-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	H II
$\mathbf{B_8}$	=	$\left(x_2+\frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_2-\frac{1}{2}\right)\,\mathbf{a}_2 - z_2\,\mathbf{a}_3$	=	$a\left(x_2+\frac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_2-\frac{1}{2}\right)\,\hat{\mathbf{y}} - cz_2\,\hat{\mathbf{z}}$	(4a)	H II
$\mathbf{B_9}$	=	$x_3\,\mathbf{a}_1 + y_3\,\mathbf{a}_2 + z_3\,\mathbf{a}_3$	=	$ax_3\,\hat{\mathbf{x}} + by_3\,\hat{\mathbf{y}} + cz_3\,\hat{\mathbf{z}}$	(4a)	H III
$\mathbf{B_{10}}$	=	$-\left(x_3-\frac{1}{2}\right)\,\mathbf{a}_1 - y_3\,\mathbf{a}_2 + \left(z_3+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_3-\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_3\,\hat{\mathbf{y}} + c\left(z_3+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	H III
$\mathbf{B_{11}}$	=	$-x_3\,\mathbf{a}_1 + \left(y_3+\frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_3-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_3\,\hat{\mathbf{x}} + b\left(y_3+\frac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_3-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	H III
$\mathbf{B_{12}}$	=	$\left(x_3+\frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_3-\frac{1}{2}\right)\,\mathbf{a}_2 - z_3\,\mathbf{a}_3$	=	$a\left(x_3+\frac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_3-\frac{1}{2}\right)\,\hat{\mathbf{y}} - cz_3\,\hat{\mathbf{z}}$	(4a)	H III
$\mathbf{B_{13}}$	=	$x_4\,\mathbf{a}_1 + y_4\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$ax_4\,\hat{\mathbf{x}} + by_4\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$	(4a)	H IV
$\mathbf{B_{14}}$	=	$-\left(x_4-\frac{1}{2}\right)\,\mathbf{a}_1 - y_4\,\mathbf{a}_2 + \left(z_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_4-\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_4\,\hat{\mathbf{y}} + c\left(z_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	H IV
$\mathbf{B_{15}}$	=	$-x_4\,\mathbf{a}_1 + \left(y_4+\frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_4-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_4\,\hat{\mathbf{x}} + b\left(y_4+\frac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_4-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	H IV
$\mathbf{B_{16}}$	=	$\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_4-\frac{1}{2}\right)\,\mathbf{a}_2 - z_4\,\mathbf{a}_3$	=	$a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_4-\frac{1}{2}\right)\,\hat{\mathbf{y}} - cz_4\,\hat{\mathbf{z}}$	(4a)	H IV
$\mathbf{B_{17}}$	=	$x_5\,\mathbf{a}_1 + y_5\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}} + by_5\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(4a)	H V

$$\mathbf{B_{18}} = -\left(x_5-\tfrac{1}{2}\right)\mathbf{a}_1 - y_5\,\mathbf{a}_2 + \left(z_5+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_5-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_5\,\hat{\mathbf{y}} + c\left(z_5+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H V}$$

$$\mathbf{B_{19}} = -x_5\,\mathbf{a}_1 + \left(y_5+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_5-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_5\,\hat{\mathbf{x}} + b\left(y_5+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_5-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H V}$$

$$\mathbf{B_{20}} = \left(x_5+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_5-\tfrac{1}{2}\right)\mathbf{a}_2 - z_5\,\mathbf{a}_3 = a\left(x_5+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_5-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_5\,\hat{\mathbf{z}} \quad (4a) \quad \text{H V}$$

$$\mathbf{B_{21}} = x_6\,\mathbf{a}_1 + y_6\,\mathbf{a}_2 + z_6\,\mathbf{a}_3 = ax_6\,\hat{\mathbf{x}} + by_6\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}} \quad (4a) \quad \text{H VI}$$

$$\mathbf{B_{22}} = -\left(x_6-\tfrac{1}{2}\right)\mathbf{a}_1 - y_6\,\mathbf{a}_2 + \left(z_6+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_6-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_6\,\hat{\mathbf{y}} + c\left(z_6+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H VI}$$

$$\mathbf{B_{23}} = -x_6\,\mathbf{a}_1 + \left(y_6+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_6-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_6\,\hat{\mathbf{x}} + b\left(y_6+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_6-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H VI}$$

$$\mathbf{B_{24}} = \left(x_6+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_6-\tfrac{1}{2}\right)\mathbf{a}_2 - z_6\,\mathbf{a}_3 = a\left(x_6+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_6-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_6\,\hat{\mathbf{z}} \quad (4a) \quad \text{H VI}$$

$$\mathbf{B_{25}} = x_7\,\mathbf{a}_1 + y_7\,\mathbf{a}_2 + z_7\,\mathbf{a}_3 = ax_7\,\hat{\mathbf{x}} + by_7\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}} \quad (4a) \quad \text{H VII}$$

$$\mathbf{B_{26}} = -\left(x_7-\tfrac{1}{2}\right)\mathbf{a}_1 - y_7\,\mathbf{a}_2 + \left(z_7+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_7-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_7\,\hat{\mathbf{y}} + c\left(z_7+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H VII}$$

$$\mathbf{B_{27}} = -x_7\,\mathbf{a}_1 + \left(y_7+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_7-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_7\,\hat{\mathbf{x}} + b\left(y_7+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_7-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H VII}$$

$$\mathbf{B_{28}} = \left(x_7+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_7-\tfrac{1}{2}\right)\mathbf{a}_2 - z_7\,\mathbf{a}_3 = a\left(x_7+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_7-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_7\,\hat{\mathbf{z}} \quad (4a) \quad \text{H VII}$$

$$\mathbf{B_{29}} = x_8\,\mathbf{a}_1 + y_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3 = ax_8\,\hat{\mathbf{x}} + by_8\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}} \quad (4a) \quad \text{H VIII}$$

$$\mathbf{B_{30}} = -\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_1 - y_8\,\mathbf{a}_2 + \left(z_8+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_8-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_8\,\hat{\mathbf{y}} + c\left(z_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H VIII}$$

$$\mathbf{B_{31}} = -x_8\,\mathbf{a}_1 + \left(y_8+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_8-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_8\,\hat{\mathbf{x}} + b\left(y_8+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_8-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H VIII}$$

$$\mathbf{B_{32}} = \left(x_8+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_8-\tfrac{1}{2}\right)\mathbf{a}_2 - z_8\,\mathbf{a}_3 = a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_8-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_8\,\hat{\mathbf{z}} \quad (4a) \quad \text{H VIII}$$

$$\mathbf{B_{33}} = x_9\,\mathbf{a}_1 + y_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3 = ax_9\,\hat{\mathbf{x}} + by_9\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}} \quad (4a) \quad \text{H IX}$$

$$\mathbf{B_{34}} = -\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_1 - y_9\,\mathbf{a}_2 + \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_9\,\hat{\mathbf{y}} + c\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H IX}$$

$$\mathbf{B_{35}} = -x_9\,\mathbf{a}_1 + \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_9-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_9\,\hat{\mathbf{x}} + b\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H IX}$$

$$\mathbf{B_{36}} = \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_9-\tfrac{1}{2}\right)\mathbf{a}_2 - z_9\,\mathbf{a}_3 = a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_9\,\hat{\mathbf{z}} \quad (4a) \quad \text{H IX}$$

$$\mathbf{B_{37}} = x_{10}\,\mathbf{a}_1 + y_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 = ax_{10}\,\hat{\mathbf{x}} + by_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H X}$$

$$\mathbf{B_{38}} = -\left(x_{10}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 + \left(z_{10}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{10}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{10}\,\hat{\mathbf{y}} + c\left(z_{10}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H X}$$

$$\mathbf{B_{39}} = -x_{10}\,\mathbf{a}_1 + \left(y_{10}+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{10}-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_{10}\,\hat{\mathbf{x}} + b\left(y_{10}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{10}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H X}$$

$$\mathbf{B_{40}} = \left(x_{10}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{10}-\tfrac{1}{2}\right)\mathbf{a}_2 - z_{10}\,\mathbf{a}_3 = a\left(x_{10}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{10}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{10}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H X}$$

$$\mathbf{B_{41}} = x_{11}\,\mathbf{a}_1 + y_{11}\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 = ax_{11}\,\hat{\mathbf{x}} + by_{11}\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H XI}$$

$$\mathbf{B_{42}} = -\left(x_{11}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{11}\,\mathbf{a}_2 + \left(z_{11}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{11}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{11}\,\hat{\mathbf{y}} + c\left(z_{11}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H XI}$$

$$\mathbf{B_{43}} = -x_{11}\,\mathbf{a}_1 + \left(y_{11}+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{11}-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_{11}\,\hat{\mathbf{x}} + b\left(y_{11}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{11}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H XI}$$

$$\mathbf{B_{44}} = \left(x_{11}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{11}-\tfrac{1}{2}\right)\mathbf{a}_2 - z_{11}\,\mathbf{a}_3 = a\left(x_{11}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{11}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{11}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H XI}$$

$$\mathbf{B_{45}} = x_{12}\,\mathbf{a}_1 + y_{12}\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 = ax_{12}\,\hat{\mathbf{x}} + by_{12}\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H XII}$$

$$\mathbf{B_{46}} = -\left(x_{12}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{12}\,\mathbf{a}_2 + \left(z_{12}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{12}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{12}\,\hat{\mathbf{y}} + c\left(z_{12}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H XII}$$

$$\mathbf{B_{47}} = -x_{12}\,\mathbf{a}_1 + \left(y_{12}+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{12}-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_{12}\,\hat{\mathbf{x}} + b\left(y_{12}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{12}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H XII}$$

$$\mathbf{B_{48}} = \left(x_{12}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{12}-\tfrac{1}{2}\right)\mathbf{a}_2 - z_{12}\,\mathbf{a}_3 = a\left(x_{12}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{12}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{12}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H XII}$$

$$\mathbf{B_{49}} = x_{13}\,\mathbf{a}_1 + y_{13}\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3 = ax_{13}\,\hat{\mathbf{x}} + by_{13}\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H XIII}$$

$$\mathbf{B_{50}} = -\left(x_{13}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{13}\,\mathbf{a}_2 + \left(z_{13}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{13}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{13}\,\hat{\mathbf{y}} + c\left(z_{13}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H XIII}$$

$$\mathbf{B_{51}} = -x_{13}\,\mathbf{a}_1 + \left(y_{13}+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{13}-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_{13}\,\hat{\mathbf{x}} + b\left(y_{13}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{13}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H XIII}$$

$$\mathbf{B_{52}} = \left(x_{13}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{13}-\tfrac{1}{2}\right)\mathbf{a}_2 - z_{13}\,\mathbf{a}_3 = a\left(x_{13}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{13}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{13}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H XIII}$$

$$\mathbf{B_{53}} = x_{14}\,\mathbf{a}_1 + y_{14}\,\mathbf{a}_2 + z_{14}\,\mathbf{a}_3 = ax_{14}\,\hat{\mathbf{x}} + by_{14}\,\hat{\mathbf{y}} + cz_{14}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H XIV}$$

$$\mathbf{B_{54}} = -\left(x_{14}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{14}\,\mathbf{a}_2 + \left(z_{14}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{14}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{14}\,\hat{\mathbf{y}} + c\left(z_{14}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H XIV}$$

$$\mathbf{B_{55}} = -x_{14}\,\mathbf{a}_1 + \left(y_{14}+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{14}-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_{14}\,\hat{\mathbf{x}} + b\left(y_{14}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{14}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{H XIV}$$

$$\mathbf{B_{56}} = \left(x_{14}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{14}-\tfrac{1}{2}\right)\mathbf{a}_2 - z_{14}\,\mathbf{a}_3 = a\left(x_{14}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{14}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{14}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H XIV}$$

$$\mathbf{B_{57}} = x_{15}\,\mathbf{a}_1 + y_{15}\,\mathbf{a}_2 + z_{15}\,\mathbf{a}_3 = ax_{15}\,\hat{\mathbf{x}} + by_{15}\,\hat{\mathbf{y}} + cz_{15}\,\hat{\mathbf{z}} \quad (4a) \quad \text{Ni I}$$

$$\mathbf{B_{58}} = -\left(x_{15}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{15}\,\mathbf{a}_2 + \left(z_{15}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{15}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{15}\,\hat{\mathbf{y}} + c\left(z_{15}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{Ni I}$$

$$\mathbf{B_{59}} = -x_{15}\,\mathbf{a}_1 + \left(y_{15}+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{15}-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_{15}\,\hat{\mathbf{x}} + b\left(y_{15}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{15}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{Ni I}$$

$$\mathbf{B_{60}} = \left(x_{15}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{15}-\tfrac{1}{2}\right)\mathbf{a}_2 - z_{15}\,\mathbf{a}_3 = a\left(x_{15}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{15}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{15}\,\hat{\mathbf{z}} \quad (4a) \quad \text{Ni I}$$

$$\mathbf{B_{61}} = x_{16}\,\mathbf{a}_1 + y_{16}\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3 = ax_{16}\,\hat{\mathbf{x}} + by_{16}\,\hat{\mathbf{y}} + cz_{16}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O I}$$

$$\mathbf{B_{62}} = -\left(x_{16}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{16}\,\mathbf{a}_2 + \left(z_{16}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{16}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{16}\,\hat{\mathbf{y}} + c\left(z_{16}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{O I}$$

$$\mathbf{B_{63}} = -x_{16}\,\mathbf{a}_1 + \left(y_{16}+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{16}-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_{16}\,\hat{\mathbf{x}} + b\left(y_{16}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{16}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{O I}$$

$$\mathbf{B_{64}} = \left(x_{16}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{16}-\tfrac{1}{2}\right)\mathbf{a}_2 - z_{16}\,\mathbf{a}_3 = a\left(x_{16}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{16}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{16}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O I}$$

$$\mathbf{B_{65}} = x_{17}\,\mathbf{a}_1 + y_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3 = ax_{17}\,\hat{\mathbf{x}} + by_{17}\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O II}$$

$$\mathbf{B_{66}} = -\left(x_{17}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{17}\,\mathbf{a}_2 + \left(z_{17}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{17}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{17}\,\hat{\mathbf{y}} + c\left(z_{17}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{O II}$$

$$\mathbf{B_{67}} = -x_{17}\,\mathbf{a}_1 + \left(y_{17}+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{17}-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_{17}\,\hat{\mathbf{x}} + b\left(y_{17}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{17}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{O II}$$

$$\mathbf{B_{68}} = \left(x_{17}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{17}-\tfrac{1}{2}\right)\mathbf{a}_2 - z_{17}\,\mathbf{a}_3 = a\left(x_{17}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{17}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{17}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O II}$$

$$\mathbf{B_{69}} = x_{18}\,\mathbf{a}_1 + y_{18}\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3 = ax_{18}\,\hat{\mathbf{x}} + by_{18}\,\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O III}$$

$$\mathbf{B_{70}} = -\left(x_{18}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{18}\,\mathbf{a}_2 + \left(z_{18}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{18}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{18}\,\hat{\mathbf{y}} + c\left(z_{18}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{O III}$$

$$\mathbf{B_{71}} = -x_{18}\,\mathbf{a}_1 + \left(y_{18}+\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{18}-\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_{18}\,\hat{\mathbf{x}} + b\left(y_{18}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{18}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{O III}$$

$\mathbf{B_{72}}$	=	$\left(x_{18}+\frac{1}{2}\right)\mathbf{a}_1-\left(y_{18}-\frac{1}{2}\right)\mathbf{a}_2-z_{18}\,\mathbf{a}_3$	=	$a\left(x_{18}+\frac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{18}-\frac{1}{2}\right)\hat{\mathbf{y}}-cz_{18}\,\hat{\mathbf{z}}$	(4a)	O III
$\mathbf{B_{73}}$	=	$x_{19}\,\mathbf{a}_1+y_{19}\,\mathbf{a}_2+z_{19}\,\mathbf{a}_3$	=	$ax_{19}\,\hat{\mathbf{x}}+by_{19}\,\hat{\mathbf{y}}+cz_{19}\,\hat{\mathbf{z}}$	(4a)	O IV
$\mathbf{B_{74}}$	=	$-\left(x_{19}-\frac{1}{2}\right)\mathbf{a}_1-y_{19}\,\mathbf{a}_2+\left(z_{19}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{19}-\frac{1}{2}\right)\hat{\mathbf{x}}-by_{19}\,\hat{\mathbf{y}}+c\left(z_{19}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O IV
$\mathbf{B_{75}}$	=	$-x_{19}\,\mathbf{a}_1+\left(y_{19}+\frac{1}{2}\right)\mathbf{a}_2-\left(z_{19}-\frac{1}{2}\right)\mathbf{a}_3$	=	$-ax_{19}\,\hat{\mathbf{x}}+b\left(y_{19}+\frac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{19}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O IV
$\mathbf{B_{76}}$	=	$\left(x_{19}+\frac{1}{2}\right)\mathbf{a}_1-\left(y_{19}-\frac{1}{2}\right)\mathbf{a}_2-z_{19}\,\mathbf{a}_3$	=	$a\left(x_{19}+\frac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{19}-\frac{1}{2}\right)\hat{\mathbf{y}}-cz_{19}\,\hat{\mathbf{z}}$	(4a)	O IV
$\mathbf{B_{77}}$	=	$x_{20}\,\mathbf{a}_1+y_{20}\,\mathbf{a}_2+z_{20}\,\mathbf{a}_3$	=	$ax_{20}\,\hat{\mathbf{x}}+by_{20}\,\hat{\mathbf{y}}+cz_{20}\,\hat{\mathbf{z}}$	(4a)	O V
$\mathbf{B_{78}}$	=	$-\left(x_{20}-\frac{1}{2}\right)\mathbf{a}_1-y_{20}\,\mathbf{a}_2+\left(z_{20}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{20}-\frac{1}{2}\right)\hat{\mathbf{x}}-by_{20}\,\hat{\mathbf{y}}+c\left(z_{20}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O V
$\mathbf{B_{79}}$	=	$-x_{20}\,\mathbf{a}_1+\left(y_{20}+\frac{1}{2}\right)\mathbf{a}_2-\left(z_{20}-\frac{1}{2}\right)\mathbf{a}_3$	=	$-ax_{20}\,\hat{\mathbf{x}}+b\left(y_{20}+\frac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{20}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O V
$\mathbf{B_{80}}$	=	$\left(x_{20}+\frac{1}{2}\right)\mathbf{a}_1-\left(y_{20}-\frac{1}{2}\right)\mathbf{a}_2-z_{20}\,\mathbf{a}_3$	=	$a\left(x_{20}+\frac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{20}-\frac{1}{2}\right)\hat{\mathbf{y}}-cz_{20}\,\hat{\mathbf{z}}$	(4a)	O V
$\mathbf{B_{81}}$	=	$x_{21}\,\mathbf{a}_1+y_{21}\,\mathbf{a}_2+z_{21}\,\mathbf{a}_3$	=	$ax_{21}\,\hat{\mathbf{x}}+by_{21}\,\hat{\mathbf{y}}+cz_{21}\,\hat{\mathbf{z}}$	(4a)	O VI
$\mathbf{B_{82}}$	=	$-\left(x_{21}-\frac{1}{2}\right)\mathbf{a}_1-y_{21}\,\mathbf{a}_2+\left(z_{21}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{21}-\frac{1}{2}\right)\hat{\mathbf{x}}-by_{21}\,\hat{\mathbf{y}}+c\left(z_{21}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O VI
$\mathbf{B_{83}}$	=	$-x_{21}\,\mathbf{a}_1+\left(y_{21}+\frac{1}{2}\right)\mathbf{a}_2-\left(z_{21}-\frac{1}{2}\right)\mathbf{a}_3$	=	$-ax_{21}\,\hat{\mathbf{x}}+b\left(y_{21}+\frac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{21}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O VI
$\mathbf{B_{84}}$	=	$\left(x_{21}+\frac{1}{2}\right)\mathbf{a}_1-\left(y_{21}-\frac{1}{2}\right)\mathbf{a}_2-z_{21}\,\mathbf{a}_3$	=	$a\left(x_{21}+\frac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{21}-\frac{1}{2}\right)\hat{\mathbf{y}}-cz_{21}\,\hat{\mathbf{z}}$	(4a)	O VI
$\mathbf{B_{85}}$	=	$x_{22}\,\mathbf{a}_1+y_{22}\,\mathbf{a}_2+z_{22}\,\mathbf{a}_3$	=	$ax_{22}\,\hat{\mathbf{x}}+by_{22}\,\hat{\mathbf{y}}+cz_{22}\,\hat{\mathbf{z}}$	(4a)	O VII
$\mathbf{B_{86}}$	=	$-\left(x_{22}-\frac{1}{2}\right)\mathbf{a}_1-y_{22}\,\mathbf{a}_2+\left(z_{22}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{22}-\frac{1}{2}\right)\hat{\mathbf{x}}-by_{22}\,\hat{\mathbf{y}}+c\left(z_{22}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O VII
$\mathbf{B_{87}}$	=	$-x_{22}\,\mathbf{a}_1+\left(y_{22}+\frac{1}{2}\right)\mathbf{a}_2-\left(z_{22}-\frac{1}{2}\right)\mathbf{a}_3$	=	$-ax_{22}\,\hat{\mathbf{x}}+b\left(y_{22}+\frac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{22}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O VII
$\mathbf{B_{88}}$	=	$\left(x_{22}+\frac{1}{2}\right)\mathbf{a}_1-\left(y_{22}-\frac{1}{2}\right)\mathbf{a}_2-z_{22}\,\mathbf{a}_3$	=	$a\left(x_{22}+\frac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{22}-\frac{1}{2}\right)\hat{\mathbf{y}}-cz_{22}\,\hat{\mathbf{z}}$	(4a)	O VII
$\mathbf{B_{89}}$	=	$x_{23}\,\mathbf{a}_1+y_{23}\,\mathbf{a}_2+z_{23}\,\mathbf{a}_3$	=	$ax_{23}\,\hat{\mathbf{x}}+by_{23}\,\hat{\mathbf{y}}+cz_{23}\,\hat{\mathbf{z}}$	(4a)	O VIII
$\mathbf{B_{90}}$	=	$-\left(x_{23}-\frac{1}{2}\right)\mathbf{a}_1-y_{23}\,\mathbf{a}_2+\left(z_{23}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{23}-\frac{1}{2}\right)\hat{\mathbf{x}}-by_{23}\,\hat{\mathbf{y}}+c\left(z_{23}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O VIII
$\mathbf{B_{91}}$	=	$-x_{23}\,\mathbf{a}_1+\left(y_{23}+\frac{1}{2}\right)\mathbf{a}_2-\left(z_{23}-\frac{1}{2}\right)\mathbf{a}_3$	=	$-ax_{23}\,\hat{\mathbf{x}}+b\left(y_{23}+\frac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{23}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O VIII
$\mathbf{B_{92}}$	=	$\left(x_{23}+\frac{1}{2}\right)\mathbf{a}_1-\left(y_{23}-\frac{1}{2}\right)\mathbf{a}_2-z_{23}\,\mathbf{a}_3$	=	$a\left(x_{23}+\frac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{23}-\frac{1}{2}\right)\hat{\mathbf{y}}-cz_{23}\,\hat{\mathbf{z}}$	(4a)	O VIII
$\mathbf{B_{93}}$	=	$x_{24}\,\mathbf{a}_1+y_{24}\,\mathbf{a}_2+z_{24}\,\mathbf{a}_3$	=	$ax_{24}\,\hat{\mathbf{x}}+by_{24}\,\hat{\mathbf{y}}+cz_{24}\,\hat{\mathbf{z}}$	(4a)	O IX
$\mathbf{B_{94}}$	=	$-\left(x_{24}-\frac{1}{2}\right)\mathbf{a}_1-y_{24}\,\mathbf{a}_2+\left(z_{24}+\frac{1}{2}\right)\mathbf{a}_3$	=	$-a\left(x_{24}-\frac{1}{2}\right)\hat{\mathbf{x}}-by_{24}\,\hat{\mathbf{y}}+c\left(z_{24}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O IX
$\mathbf{B_{95}}$	=	$-x_{24}\,\mathbf{a}_1+\left(y_{24}+\frac{1}{2}\right)\mathbf{a}_2-\left(z_{24}-\frac{1}{2}\right)\mathbf{a}_3$	=	$-ax_{24}\,\hat{\mathbf{x}}+b\left(y_{24}+\frac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{24}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O IX
$\mathbf{B_{96}}$	=	$\left(x_{24}+\frac{1}{2}\right)\mathbf{a}_1-\left(y_{24}-\frac{1}{2}\right)\mathbf{a}_2-z_{24}\,\mathbf{a}_3$	=	$a\left(x_{24}+\frac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{24}-\frac{1}{2}\right)\hat{\mathbf{y}}-cz_{24}\,\hat{\mathbf{z}}$	(4a)	O IX
$\mathbf{B_{97}}$	=	$x_{25}\,\mathbf{a}_1+y_{25}\,\mathbf{a}_2+z_{25}\,\mathbf{a}_3$	=	$ax_{25}\,\hat{\mathbf{x}}+by_{25}\,\hat{\mathbf{y}}+cz_{25}\,\hat{\mathbf{z}}$	(4a)	O X

$\mathbf{B_{98}}$	$= -\left(x_{25}-\frac{1}{2}\right)\mathbf{a}_1 - y_{25}\,\mathbf{a}_2 + \left(z_{25}+\frac{1}{2}\right)\mathbf{a}_3$	$=$	$-a\left(x_{25}-\frac{1}{2}\right)\hat{\mathbf{x}} - by_{25}\,\hat{\mathbf{y}} + c\left(z_{25}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O X
$\mathbf{B_{99}}$	$= -x_{25}\,\mathbf{a}_1 + \left(y_{25}+\frac{1}{2}\right)\mathbf{a}_2 - \left(z_{25}-\frac{1}{2}\right)\mathbf{a}_3$	$=$	$-ax_{25}\,\hat{\mathbf{x}} + b\left(y_{25}+\frac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{25}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O X
$\mathbf{B_{100}}$	$= \left(x_{25}+\frac{1}{2}\right)\mathbf{a}_1 - \left(y_{25}-\frac{1}{2}\right)\mathbf{a}_2 - z_{25}\,\mathbf{a}_3$	$=$	$a\left(x_{25}+\frac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{25}-\frac{1}{2}\right)\hat{\mathbf{y}} - cz_{25}\,\hat{\mathbf{z}}$	(4a)	O X
$\mathbf{B_{101}}$	$= x_{26}\,\mathbf{a}_1 + y_{26}\,\mathbf{a}_2 + z_{26}\,\mathbf{a}_3$	$=$	$ax_{26}\,\hat{\mathbf{x}} + by_{26}\,\hat{\mathbf{y}} + cz_{26}\,\hat{\mathbf{z}}$	(4a)	O XI
$\mathbf{B_{102}}$	$= -\left(x_{26}-\frac{1}{2}\right)\mathbf{a}_1 - y_{26}\,\mathbf{a}_2 + \left(z_{26}+\frac{1}{2}\right)\mathbf{a}_3$	$=$	$-a\left(x_{26}-\frac{1}{2}\right)\hat{\mathbf{x}} - by_{26}\,\hat{\mathbf{y}} + c\left(z_{26}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O XI
$\mathbf{B_{103}}$	$= -x_{26}\,\mathbf{a}_1 + \left(y_{26}+\frac{1}{2}\right)\mathbf{a}_2 - \left(z_{26}-\frac{1}{2}\right)\mathbf{a}_3$	$=$	$-ax_{26}\,\hat{\mathbf{x}} + b\left(y_{26}+\frac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{26}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	O XI
$\mathbf{B_{104}}$	$= \left(x_{26}+\frac{1}{2}\right)\mathbf{a}_1 - \left(y_{26}-\frac{1}{2}\right)\mathbf{a}_2 - z_{26}\,\mathbf{a}_3$	$=$	$a\left(x_{26}+\frac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{26}-\frac{1}{2}\right)\hat{\mathbf{y}} - cz_{26}\,\hat{\mathbf{z}}$	(4a)	O XI
$\mathbf{B_{105}}$	$= x_{27}\,\mathbf{a}_1 + y_{27}\,\mathbf{a}_2 + z_{27}\,\mathbf{a}_3$	$=$	$ax_{27}\,\hat{\mathbf{x}} + by_{27}\,\hat{\mathbf{y}} + cz_{27}\,\hat{\mathbf{z}}$	(4a)	S I
$\mathbf{B_{106}}$	$= -\left(x_{27}-\frac{1}{2}\right)\mathbf{a}_1 - y_{27}\,\mathbf{a}_2 + \left(z_{27}+\frac{1}{2}\right)\mathbf{a}_3$	$=$	$-a\left(x_{27}-\frac{1}{2}\right)\hat{\mathbf{x}} - by_{27}\,\hat{\mathbf{y}} + c\left(z_{27}+\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	S I
$\mathbf{B_{107}}$	$= -x_{27}\,\mathbf{a}_1 + \left(y_{27}+\frac{1}{2}\right)\mathbf{a}_2 - \left(z_{27}-\frac{1}{2}\right)\mathbf{a}_3$	$=$	$-ax_{27}\,\hat{\mathbf{x}} + b\left(y_{27}+\frac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{27}-\frac{1}{2}\right)\hat{\mathbf{z}}$	(4a)	S I
$\mathbf{B_{108}}$	$= \left(x_{27}+\frac{1}{2}\right)\mathbf{a}_1 - \left(y_{27}-\frac{1}{2}\right)\mathbf{a}_2 - z_{27}\,\mathbf{a}_3$	$=$	$a\left(x_{27}+\frac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{27}-\frac{1}{2}\right)\hat{\mathbf{y}} - cz_{27}\,\hat{\mathbf{z}}$	(4a)	S I

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