Low Temperature Bornite (Cu_5FeS_4) Structure: A5BC4_oP160_29_20a_4a_16a-001

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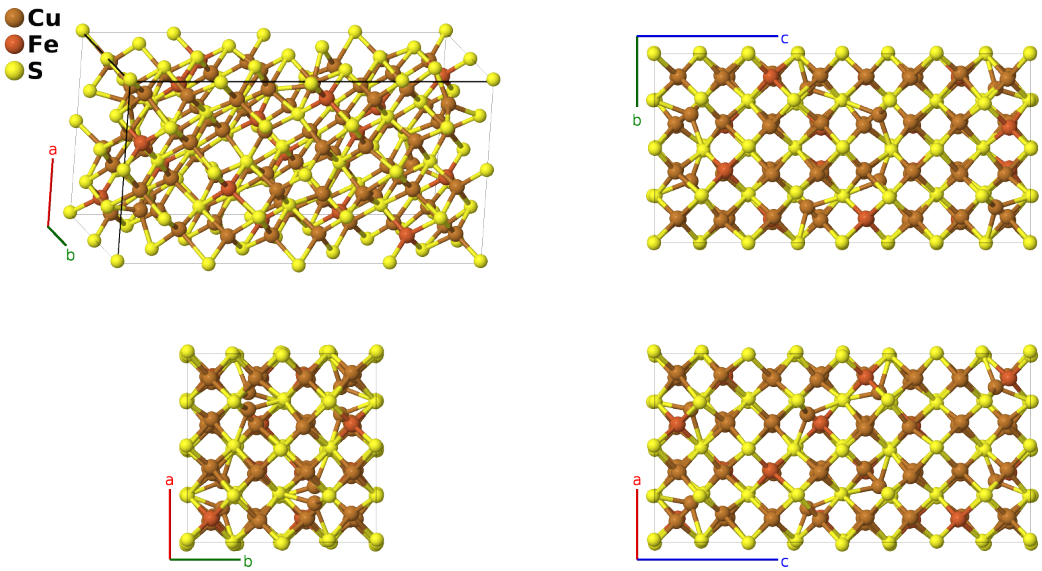
https://aflow.org/p/H7LS

https://aflow.org/p/A5BC4_oP160_29_20a_4a_16a-001



Prototype	Cu_5FeS_4
AFLOW prototype label	A5BC4_oP160_29_20a_4a_16a-001
Mineral name	bornite
ICSD	130920
Pearson symbol	oP160
Space group number	29
Space group symbol	$Pca2_1$
AFLOW prototype command	`aflow --proto=A5BC4_oP160_29_20a_4a_16a-001` `--params=`$a, b/a, c/a, x_1, y_1, z_1, x_2, y_2, z_2, x_3, y_3, z_3, x_4, y_4, z_4, x_5, y_5, z_5, x_6, y_6, z_6, x_7, y_7, z_7, x_8, y_8, z_8, x_9, y_9, z_9, x_{10}, y_{10}, z_{10}, x_{11}, y_{11}, z_{11}, x_{12}, y_{12}, z_{12}, x_{13}, y_{13}, z_{13}, x_{14}, y_{14}, z_{14}, x_{15}, y_{15}, z_{15}, x_{16}, y_{16}, z_{16}, x_{17}, y_{17}, z_{17}, x_{18}, y_{18}, z_{18}, x_{19}, y_{19}, z_{19}, x_{20}, y_{20}, z_{20}, x_{21}, y_{21}, z_{21}, x_{22}, y_{22}, z_{22}, x_{23}, y_{23}, z_{23}, x_{24}, y_{24}, z_{24}, x_{25}, y_{25}, z_{25}, x_{26}, y_{26}, z_{26}, x_{27}, y_{27}, z_{27}, x_{28}, y_{28}, z_{28}, x_{29}, y_{29}, z_{29}, x_{30}, y_{30}, z_{30}, x_{31}, y_{31}, z_{31}, x_{32}, y_{32}, z_{32}, x_{33}, y_{33}, z_{33}, x_{34}, y_{34}, z_{34}, x_{35}, y_{35}, z_{35}, x_{36}, y_{36}, z_{36}, x_{37}, y_{37}, z_{37}, x_{38}, y_{38}, z_{38}, x_{39}, y_{39}, z_{39}, x_{40}, y_{40}, z_{40}$

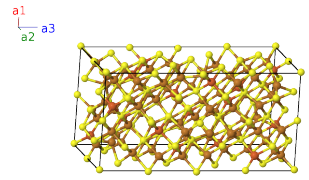
- Bornite can take on several forms at different temperatures (Martinelli, 2018):
  - At temperatures above 508K it is cubic with an "anti"-fluorite ($C1$) structure.
  - From 443K to 508K it becomes a a supercell of an anti-fluorite structure.
  - Below 443K it becomes orthorhombic, in the $Pbca$ #61 space group.

- As temperatures drop into the 50-70K range it transforms in to the non-centrosymmetric $Pca2_1$ #29 space group (this structure).

- In all of these cases the sulfur atoms form a face-centered or nearly face-centered cubic lattice.
- Data for this low-temperature structure was taken at 10K.

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)	Cu I
$\mathbf{B_2}$	=	$-x_1\,\mathbf{a}_1 - y_1\,\mathbf{a}_2 + \left(z_1 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_1\,\hat{\mathbf{x}} - by_1\,\hat{\mathbf{y}} + c\left(z_1 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu I
$\mathbf{B_3}$	=	$\left(x_1 + \frac{1}{2}\right)\,\mathbf{a}_1 - y_1\,\mathbf{a}_2 + z_1\,\mathbf{a}_3$	=	$a\left(x_1 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - by_1\,\hat{\mathbf{y}} + cz_1\,\hat{\mathbf{z}}$	(4a)	Cu I
$\mathbf{B_4}$	=	$-\left(x_1 - \frac{1}{2}\right)\,\mathbf{a}_1 + y_1\,\mathbf{a}_2 + \left(z_1 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_1 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + by_1\,\hat{\mathbf{y}} + c\left(z_1 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu 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)	Cu II
$\mathbf{B_6}$	=	$-x_2\,\mathbf{a}_1 - y_2\,\mathbf{a}_2 + \left(z_2 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_2\,\hat{\mathbf{x}} - by_2\,\hat{\mathbf{y}} + c\left(z_2 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu II
$\mathbf{B_7}$	=	$\left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_1 - y_2\,\mathbf{a}_2 + z_2\,\mathbf{a}_3$	=	$a\left(x_2 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - by_2\,\hat{\mathbf{y}} + cz_2\,\hat{\mathbf{z}}$	(4a)	Cu II
$\mathbf{B_8}$	=	$-\left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_1 + y_2\,\mathbf{a}_2 + \left(z_2 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_2 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + by_2\,\hat{\mathbf{y}} + c\left(z_2 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu 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)	Cu III
$\mathbf{B_{10}}$	=	$-x_3\,\mathbf{a}_1 - y_3\,\mathbf{a}_2 + \left(z_3 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_3\,\hat{\mathbf{x}} - by_3\,\hat{\mathbf{y}} + c\left(z_3 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu III
$\mathbf{B_{11}}$	=	$\left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_1 - y_3\,\mathbf{a}_2 + z_3\,\mathbf{a}_3$	=	$a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - by_3\,\hat{\mathbf{y}} + cz_3\,\hat{\mathbf{z}}$	(4a)	Cu III
$\mathbf{B_{12}}$	=	$-\left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_1 + y_3\,\mathbf{a}_2 + \left(z_3 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + by_3\,\hat{\mathbf{y}} + c\left(z_3 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu 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)	Cu IV
$\mathbf{B_{14}}$	=	$-x_4\,\mathbf{a}_1 - y_4\,\mathbf{a}_2 + \left(z_4 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_4\,\hat{\mathbf{x}} - by_4\,\hat{\mathbf{y}} + c\left(z_4 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu IV
$\mathbf{B_{15}}$	=	$\left(x_4 + \frac{1}{2}\right)\,\mathbf{a}_1 - y_4\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$a\left(x_4 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - by_4\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$	(4a)	Cu IV
$\mathbf{B_{16}}$	=	$-\left(x_4 - \frac{1}{2}\right)\,\mathbf{a}_1 + y_4\,\mathbf{a}_2 + \left(z_4 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_4 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + by_4\,\hat{\mathbf{y}} + c\left(z_4 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu 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)	Cu V
$\mathbf{B_{18}}$	=	$-x_5\,\mathbf{a}_1 - y_5\,\mathbf{a}_2 + \left(z_5 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_5\,\hat{\mathbf{x}} - by_5\,\hat{\mathbf{y}} + c\left(z_5 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu V
$\mathbf{B_{19}}$	=	$\left(x_5 + \frac{1}{2}\right)\,\mathbf{a}_1 - y_5\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$a\left(x_5 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - by_5\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(4a)	Cu V
$\mathbf{B_{20}}$	=	$-\left(x_5 - \frac{1}{2}\right)\,\mathbf{a}_1 + y_5\,\mathbf{a}_2 + \left(z_5 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_5 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + by_5\,\hat{\mathbf{y}} + c\left(z_5 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu V
$\mathbf{B_{21}}$	=	$x_6\,\mathbf{a}_1 + y_6\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$ax_6\,\hat{\mathbf{x}} + by_6\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(4a)	Cu VI
$\mathbf{B_{22}}$	=	$-x_6\,\mathbf{a}_1 - y_6\,\mathbf{a}_2 + \left(z_6 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_6\,\hat{\mathbf{x}} - by_6\,\hat{\mathbf{y}} + c\left(z_6 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu VI
$\mathbf{B_{23}}$	=	$\left(x_6 + \frac{1}{2}\right)\,\mathbf{a}_1 - y_6\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$a\left(x_6 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - by_6\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(4a)	Cu VI

$\mathbf{B_{24}}$	$=$	$-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_1+y_6\,\mathbf{a}_2+\left(z_6+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_6\,\hat{\mathbf{y}}+c\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu VI
$\mathbf{B_{25}}$	$=$	$x_7\,\mathbf{a}_1+y_7\,\mathbf{a}_2+z_7\,\mathbf{a}_3$	$=$	$ax_7\,\hat{\mathbf{x}}+by_7\,\hat{\mathbf{y}}+cz_7\,\hat{\mathbf{z}}$	(4a)	Cu VII
$\mathbf{B_{26}}$	$=$	$-x_7\,\mathbf{a}_1-y_7\,\mathbf{a}_2+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_7\,\hat{\mathbf{x}}-by_7\,\hat{\mathbf{y}}+c\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu VII
$\mathbf{B_{27}}$	$=$	$\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_1-y_7\,\mathbf{a}_2+z_7\,\mathbf{a}_3$	$=$	$a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_7\,\hat{\mathbf{y}}+cz_7\,\hat{\mathbf{z}}$	(4a)	Cu VII
$\mathbf{B_{28}}$	$=$	$-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_1+y_7\,\mathbf{a}_2+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_7\,\hat{\mathbf{y}}+c\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu VII
$\mathbf{B_{29}}$	$=$	$x_8\,\mathbf{a}_1+y_8\,\mathbf{a}_2+z_8\,\mathbf{a}_3$	$=$	$ax_8\,\hat{\mathbf{x}}+by_8\,\hat{\mathbf{y}}+cz_8\,\hat{\mathbf{z}}$	(4a)	Cu VIII
$\mathbf{B_{30}}$	$=$	$-x_8\,\mathbf{a}_1-y_8\,\mathbf{a}_2+\left(z_8+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_8\,\hat{\mathbf{x}}-by_8\,\hat{\mathbf{y}}+c\left(z_8+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu VIII
$\mathbf{B_{31}}$	$=$	$\left(x_8+\frac{1}{2}\right)\,\mathbf{a}_1-y_8\,\mathbf{a}_2+z_8\,\mathbf{a}_3$	$=$	$a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_8\,\hat{\mathbf{y}}+cz_8\,\hat{\mathbf{z}}$	(4a)	Cu VIII
$\mathbf{B_{32}}$	$=$	$-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_1+y_8\,\mathbf{a}_2+\left(z_8+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_8\,\hat{\mathbf{y}}+c\left(z_8+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu VIII
$\mathbf{B_{33}}$	$=$	$x_9\,\mathbf{a}_1+y_9\,\mathbf{a}_2+z_9\,\mathbf{a}_3$	$=$	$ax_9\,\hat{\mathbf{x}}+by_9\,\hat{\mathbf{y}}+cz_9\,\hat{\mathbf{z}}$	(4a)	Cu IX
$\mathbf{B_{34}}$	$=$	$-x_9\,\mathbf{a}_1-y_9\,\mathbf{a}_2+\left(z_9+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_9\,\hat{\mathbf{x}}-by_9\,\hat{\mathbf{y}}+c\left(z_9+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu IX
$\mathbf{B_{35}}$	$=$	$\left(x_9+\frac{1}{2}\right)\,\mathbf{a}_1-y_9\,\mathbf{a}_2+z_9\,\mathbf{a}_3$	$=$	$a\left(x_9+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_9\,\hat{\mathbf{y}}+cz_9\,\hat{\mathbf{z}}$	(4a)	Cu IX
$\mathbf{B_{36}}$	$=$	$-\left(x_9-\frac{1}{2}\right)\,\mathbf{a}_1+y_9\,\mathbf{a}_2+\left(z_9+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_9-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_9\,\hat{\mathbf{y}}+c\left(z_9+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu IX
$\mathbf{B_{37}}$	$=$	$x_{10}\,\mathbf{a}_1+y_{10}\,\mathbf{a}_2+z_{10}\,\mathbf{a}_3$	$=$	$ax_{10}\,\hat{\mathbf{x}}+by_{10}\,\hat{\mathbf{y}}+cz_{10}\,\hat{\mathbf{z}}$	(4a)	Cu X
$\mathbf{B_{38}}$	$=$	$-x_{10}\,\mathbf{a}_1-y_{10}\,\mathbf{a}_2+\left(z_{10}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{10}\,\hat{\mathbf{x}}-by_{10}\,\hat{\mathbf{y}}+c\left(z_{10}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu X
$\mathbf{B_{39}}$	$=$	$\left(x_{10}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{10}\,\mathbf{a}_2+z_{10}\,\mathbf{a}_3$	$=$	$a\left(x_{10}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{10}\,\hat{\mathbf{y}}+cz_{10}\,\hat{\mathbf{z}}$	(4a)	Cu X
$\mathbf{B_{40}}$	$=$	$-\left(x_{10}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{10}\,\mathbf{a}_2+\left(z_{10}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{10}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{10}\,\hat{\mathbf{y}}+c\left(z_{10}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu X
$\mathbf{B_{41}}$	$=$	$x_{11}\,\mathbf{a}_1+y_{11}\,\mathbf{a}_2+z_{11}\,\mathbf{a}_3$	$=$	$ax_{11}\,\hat{\mathbf{x}}+by_{11}\,\hat{\mathbf{y}}+cz_{11}\,\hat{\mathbf{z}}$	(4a)	Cu XI
$\mathbf{B_{42}}$	$=$	$-x_{11}\,\mathbf{a}_1-y_{11}\,\mathbf{a}_2+\left(z_{11}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{11}\,\hat{\mathbf{x}}-by_{11}\,\hat{\mathbf{y}}+c\left(z_{11}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XI
$\mathbf{B_{43}}$	$=$	$\left(x_{11}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{11}\,\mathbf{a}_2+z_{11}\,\mathbf{a}_3$	$=$	$a\left(x_{11}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{11}\,\hat{\mathbf{y}}+cz_{11}\,\hat{\mathbf{z}}$	(4a)	Cu XI
$\mathbf{B_{44}}$	$=$	$-\left(x_{11}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{11}\,\mathbf{a}_2+\left(z_{11}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{11}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{11}\,\hat{\mathbf{y}}+c\left(z_{11}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XI
$\mathbf{B_{45}}$	$=$	$x_{12}\,\mathbf{a}_1+y_{12}\,\mathbf{a}_2+z_{12}\,\mathbf{a}_3$	$=$	$ax_{12}\,\hat{\mathbf{x}}+by_{12}\,\hat{\mathbf{y}}+cz_{12}\,\hat{\mathbf{z}}$	(4a)	Cu XII
$\mathbf{B_{46}}$	$=$	$-x_{12}\,\mathbf{a}_1-y_{12}\,\mathbf{a}_2+\left(z_{12}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{12}\,\hat{\mathbf{x}}-by_{12}\,\hat{\mathbf{y}}+c\left(z_{12}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XII
$\mathbf{B_{47}}$	$=$	$\left(x_{12}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{12}\,\mathbf{a}_2+z_{12}\,\mathbf{a}_3$	$=$	$a\left(x_{12}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{12}\,\hat{\mathbf{y}}+cz_{12}\,\hat{\mathbf{z}}$	(4a)	Cu XII
$\mathbf{B_{48}}$	$=$	$-\left(x_{12}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{12}\,\mathbf{a}_2+\left(z_{12}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{12}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{12}\,\hat{\mathbf{y}}+c\left(z_{12}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XII
$\mathbf{B_{49}}$	$=$	$x_{13}\,\mathbf{a}_1+y_{13}\,\mathbf{a}_2+z_{13}\,\mathbf{a}_3$	$=$	$ax_{13}\,\hat{\mathbf{x}}+by_{13}\,\hat{\mathbf{y}}+cz_{13}\,\hat{\mathbf{z}}$	(4a)	Cu XIII
$\mathbf{B_{50}}$	$=$	$-x_{13}\,\mathbf{a}_1-y_{13}\,\mathbf{a}_2+\left(z_{13}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{13}\,\hat{\mathbf{x}}-by_{13}\,\hat{\mathbf{y}}+c\left(z_{13}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XIII
$\mathbf{B_{51}}$	$=$	$\left(x_{13}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{13}\,\mathbf{a}_2+z_{13}\,\mathbf{a}_3$	$=$	$a\left(x_{13}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{13}\,\hat{\mathbf{y}}+cz_{13}\,\hat{\mathbf{z}}$	(4a)	Cu XIII
$\mathbf{B_{52}}$	$=$	$-\left(x_{13}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{13}\,\mathbf{a}_2+\left(z_{13}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{13}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{13}\,\hat{\mathbf{y}}+c\left(z_{13}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XIII
$\mathbf{B_{53}}$	$=$	$x_{14}\,\mathbf{a}_1+y_{14}\,\mathbf{a}_2+z_{14}\,\mathbf{a}_3$	$=$	$ax_{14}\,\hat{\mathbf{x}}+by_{14}\,\hat{\mathbf{y}}+cz_{14}\,\hat{\mathbf{z}}$	(4a)	Cu XIV
$\mathbf{B_{54}}$	$=$	$-x_{14}\,\mathbf{a}_1-y_{14}\,\mathbf{a}_2+\left(z_{14}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{14}\,\hat{\mathbf{x}}-by_{14}\,\hat{\mathbf{y}}+c\left(z_{14}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XIV
$\mathbf{B_{55}}$	$=$	$\left(x_{14}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{14}\,\mathbf{a}_2+z_{14}\,\mathbf{a}_3$	$=$	$a\left(x_{14}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{14}\,\hat{\mathbf{y}}+cz_{14}\,\hat{\mathbf{z}}$	(4a)	Cu XIV
$\mathbf{B_{56}}$	$=$	$-\left(x_{14}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{14}\,\mathbf{a}_2+\left(z_{14}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{14}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{14}\,\hat{\mathbf{y}}+c\left(z_{14}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XIV
$\mathbf{B_{57}}$	$=$	$x_{15}\,\mathbf{a}_1+y_{15}\,\mathbf{a}_2+z_{15}\,\mathbf{a}_3$	$=$	$ax_{15}\,\hat{\mathbf{x}}+by_{15}\,\hat{\mathbf{y}}+cz_{15}\,\hat{\mathbf{z}}$	(4a)	Cu XV

$\mathbf{B_{58}}$	$=$	$-x_{15}\,\mathbf{a}_1 - y_{15}\,\mathbf{a}_2 + \left(z_{15}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{15}\,\hat{\mathbf{x}} - by_{15}\,\hat{\mathbf{y}} + c\left(z_{15}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XV
$\mathbf{B_{59}}$	$=$	$\left(x_{15}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{15}\,\mathbf{a}_2 + z_{15}\,\mathbf{a}_3$	$=$	$a\left(x_{15}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{15}\,\hat{\mathbf{y}} + cz_{15}\,\hat{\mathbf{z}}$	(4a)	Cu XV
$\mathbf{B_{60}}$	$=$	$-\left(x_{15}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{15}\,\mathbf{a}_2 + \left(z_{15}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{15}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{15}\,\hat{\mathbf{y}} + c\left(z_{15}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XV
$\mathbf{B_{61}}$	$=$	$x_{16}\,\mathbf{a}_1 + y_{16}\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3$	$=$	$ax_{16}\,\hat{\mathbf{x}} + by_{16}\,\hat{\mathbf{y}} + cz_{16}\,\hat{\mathbf{z}}$	(4a)	Cu XVI
$\mathbf{B_{62}}$	$=$	$-x_{16}\,\mathbf{a}_1 - y_{16}\,\mathbf{a}_2 + \left(z_{16}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{16}\,\hat{\mathbf{x}} - by_{16}\,\hat{\mathbf{y}} + c\left(z_{16}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XVI
$\mathbf{B_{63}}$	$=$	$\left(x_{16}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{16}\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3$	$=$	$a\left(x_{16}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{16}\,\hat{\mathbf{y}} + cz_{16}\,\hat{\mathbf{z}}$	(4a)	Cu XVI
$\mathbf{B_{64}}$	$=$	$-\left(x_{16}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{16}\,\mathbf{a}_2 + \left(z_{16}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{16}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{16}\,\hat{\mathbf{y}} + c\left(z_{16}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XVI
$\mathbf{B_{65}}$	$=$	$x_{17}\,\mathbf{a}_1 + y_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3$	$=$	$ax_{17}\,\hat{\mathbf{x}} + by_{17}\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}}$	(4a)	Cu XVII
$\mathbf{B_{66}}$	$=$	$-x_{17}\,\mathbf{a}_1 - y_{17}\,\mathbf{a}_2 + \left(z_{17}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{17}\,\hat{\mathbf{x}} - by_{17}\,\hat{\mathbf{y}} + c\left(z_{17}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XVII
$\mathbf{B_{67}}$	$=$	$\left(x_{17}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3$	$=$	$a\left(x_{17}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{17}\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}}$	(4a)	Cu XVII
$\mathbf{B_{68}}$	$=$	$-\left(x_{17}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{17}\,\mathbf{a}_2 + \left(z_{17}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{17}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{17}\,\hat{\mathbf{y}} + c\left(z_{17}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XVII
$\mathbf{B_{69}}$	$=$	$x_{18}\,\mathbf{a}_1 + y_{18}\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3$	$=$	$ax_{18}\,\hat{\mathbf{x}} + by_{18}\,\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}}$	(4a)	Cu XVIII
$\mathbf{B_{70}}$	$=$	$-x_{18}\,\mathbf{a}_1 - y_{18}\,\mathbf{a}_2 + \left(z_{18}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{18}\,\hat{\mathbf{x}} - by_{18}\,\hat{\mathbf{y}} + c\left(z_{18}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XVIII
$\mathbf{B_{71}}$	$=$	$\left(x_{18}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{18}\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3$	$=$	$a\left(x_{18}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{18}\,\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}}$	(4a)	Cu XVIII
$\mathbf{B_{72}}$	$=$	$-\left(x_{18}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{18}\,\mathbf{a}_2 + \left(z_{18}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{18}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{18}\,\hat{\mathbf{y}} + c\left(z_{18}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XVIII
$\mathbf{B_{73}}$	$=$	$x_{19}\,\mathbf{a}_1 + y_{19}\,\mathbf{a}_2 + z_{19}\,\mathbf{a}_3$	$=$	$ax_{19}\,\hat{\mathbf{x}} + by_{19}\,\hat{\mathbf{y}} + cz_{19}\,\hat{\mathbf{z}}$	(4a)	Cu XIX
$\mathbf{B_{74}}$	$=$	$-x_{19}\,\mathbf{a}_1 - y_{19}\,\mathbf{a}_2 + \left(z_{19}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{19}\,\hat{\mathbf{x}} - by_{19}\,\hat{\mathbf{y}} + c\left(z_{19}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XIX
$\mathbf{B_{75}}$	$=$	$\left(x_{19}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{19}\,\mathbf{a}_2 + z_{19}\,\mathbf{a}_3$	$=$	$a\left(x_{19}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{19}\,\hat{\mathbf{y}} + cz_{19}\,\hat{\mathbf{z}}$	(4a)	Cu XIX
$\mathbf{B_{76}}$	$=$	$-\left(x_{19}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{19}\,\mathbf{a}_2 + \left(z_{19}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{19}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{19}\,\hat{\mathbf{y}} + c\left(z_{19}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XIX
$\mathbf{B_{77}}$	$=$	$x_{20}\,\mathbf{a}_1 + y_{20}\,\mathbf{a}_2 + z_{20}\,\mathbf{a}_3$	$=$	$ax_{20}\,\hat{\mathbf{x}} + by_{20}\,\hat{\mathbf{y}} + cz_{20}\,\hat{\mathbf{z}}$	(4a)	Cu XX
$\mathbf{B_{78}}$	$=$	$-x_{20}\,\mathbf{a}_1 - y_{20}\,\mathbf{a}_2 + \left(z_{20}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{20}\,\hat{\mathbf{x}} - by_{20}\,\hat{\mathbf{y}} + c\left(z_{20}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XX
$\mathbf{B_{79}}$	$=$	$\left(x_{20}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{20}\,\mathbf{a}_2 + z_{20}\,\mathbf{a}_3$	$=$	$a\left(x_{20}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{20}\,\hat{\mathbf{y}} + cz_{20}\,\hat{\mathbf{z}}$	(4a)	Cu XX
$\mathbf{B_{80}}$	$=$	$-\left(x_{20}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{20}\,\mathbf{a}_2 + \left(z_{20}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{20}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{20}\,\hat{\mathbf{y}} + c\left(z_{20}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Cu XX
$\mathbf{B_{81}}$	$=$	$x_{21}\,\mathbf{a}_1 + y_{21}\,\mathbf{a}_2 + z_{21}\,\mathbf{a}_3$	$=$	$ax_{21}\,\hat{\mathbf{x}} + by_{21}\,\hat{\mathbf{y}} + cz_{21}\,\hat{\mathbf{z}}$	(4a)	Fe I
$\mathbf{B_{82}}$	$=$	$-x_{21}\,\mathbf{a}_1 - y_{21}\,\mathbf{a}_2 + \left(z_{21}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{21}\,\hat{\mathbf{x}} - by_{21}\,\hat{\mathbf{y}} + c\left(z_{21}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Fe I
$\mathbf{B_{83}}$	$=$	$\left(x_{21}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{21}\,\mathbf{a}_2 + z_{21}\,\mathbf{a}_3$	$=$	$a\left(x_{21}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{21}\,\hat{\mathbf{y}} + cz_{21}\,\hat{\mathbf{z}}$	(4a)	Fe I
$\mathbf{B_{84}}$	$=$	$-\left(x_{21}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{21}\,\mathbf{a}_2 + \left(z_{21}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{21}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{21}\,\hat{\mathbf{y}} + c\left(z_{21}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Fe I
$\mathbf{B_{85}}$	$=$	$x_{22}\,\mathbf{a}_1 + y_{22}\,\mathbf{a}_2 + z_{22}\,\mathbf{a}_3$	$=$	$ax_{22}\,\hat{\mathbf{x}} + by_{22}\,\hat{\mathbf{y}} + cz_{22}\,\hat{\mathbf{z}}$	(4a)	Fe II
$\mathbf{B_{86}}$	$=$	$-x_{22}\,\mathbf{a}_1 - y_{22}\,\mathbf{a}_2 + \left(z_{22}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{22}\,\hat{\mathbf{x}} - by_{22}\,\hat{\mathbf{y}} + c\left(z_{22}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Fe II
$\mathbf{B_{87}}$	$=$	$\left(x_{22}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{22}\,\mathbf{a}_2 + z_{22}\,\mathbf{a}_3$	$=$	$a\left(x_{22}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{22}\,\hat{\mathbf{y}} + cz_{22}\,\hat{\mathbf{z}}$	(4a)	Fe II
$\mathbf{B_{88}}$	$=$	$-\left(x_{22}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{22}\,\mathbf{a}_2 + \left(z_{22}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{22}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{22}\,\hat{\mathbf{y}} + c\left(z_{22}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Fe II
$\mathbf{B_{89}}$	$=$	$x_{23}\,\mathbf{a}_1 + y_{23}\,\mathbf{a}_2 + z_{23}\,\mathbf{a}_3$	$=$	$ax_{23}\,\hat{\mathbf{x}} + by_{23}\,\hat{\mathbf{y}} + cz_{23}\,\hat{\mathbf{z}}$	(4a)	Fe III
$\mathbf{B_{90}}$	$=$	$-x_{23}\,\mathbf{a}_1 - y_{23}\,\mathbf{a}_2 + \left(z_{23}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{23}\,\hat{\mathbf{x}} - by_{23}\,\hat{\mathbf{y}} + c\left(z_{23}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Fe III
$\mathbf{B_{91}}$	$=$	$\left(x_{23}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{23}\,\mathbf{a}_2 + z_{23}\,\mathbf{a}_3$	$=$	$a\left(x_{23}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{23}\,\hat{\mathbf{y}} + cz_{23}\,\hat{\mathbf{z}}$	(4a)	Fe III

$\mathbf{B_{92}}$	$=$	$-\left(x_{23}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{23}\,\mathbf{a}_2+\left(z_{23}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{23}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{23}\,\hat{\mathbf{y}}+c\left(z_{23}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Fe III
$\mathbf{B_{93}}$	$=$	$x_{24}\,\mathbf{a}_1+y_{24}\,\mathbf{a}_2+z_{24}\,\mathbf{a}_3$	$=$	$ax_{24}\,\hat{\mathbf{x}}+by_{24}\,\hat{\mathbf{y}}+cz_{24}\,\hat{\mathbf{z}}$	(4a)	Fe IV
$\mathbf{B_{94}}$	$=$	$-x_{24}\,\mathbf{a}_1-y_{24}\,\mathbf{a}_2+\left(z_{24}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{24}\,\hat{\mathbf{x}}-by_{24}\,\hat{\mathbf{y}}+c\left(z_{24}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Fe IV
$\mathbf{B_{95}}$	$=$	$\left(x_{24}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{24}\,\mathbf{a}_2+z_{24}\,\mathbf{a}_3$	$=$	$a\left(x_{24}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{24}\,\hat{\mathbf{y}}+cz_{24}\,\hat{\mathbf{z}}$	(4a)	Fe IV
$\mathbf{B_{96}}$	$=$	$-\left(x_{24}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{24}\,\mathbf{a}_2+\left(z_{24}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{24}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{24}\,\hat{\mathbf{y}}+c\left(z_{24}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	Fe IV
$\mathbf{B_{97}}$	$=$	$x_{25}\,\mathbf{a}_1+y_{25}\,\mathbf{a}_2+z_{25}\,\mathbf{a}_3$	$=$	$ax_{25}\,\hat{\mathbf{x}}+by_{25}\,\hat{\mathbf{y}}+cz_{25}\,\hat{\mathbf{z}}$	(4a)	S I
$\mathbf{B_{98}}$	$=$	$-x_{25}\,\mathbf{a}_1-y_{25}\,\mathbf{a}_2+\left(z_{25}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{25}\,\hat{\mathbf{x}}-by_{25}\,\hat{\mathbf{y}}+c\left(z_{25}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S I
$\mathbf{B_{99}}$	$=$	$\left(x_{25}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{25}\,\mathbf{a}_2+z_{25}\,\mathbf{a}_3$	$=$	$a\left(x_{25}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{25}\,\hat{\mathbf{y}}+cz_{25}\,\hat{\mathbf{z}}$	(4a)	S I
$\mathbf{B_{100}}$	$=$	$-\left(x_{25}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{25}\,\mathbf{a}_2+\left(z_{25}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{25}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{25}\,\hat{\mathbf{y}}+c\left(z_{25}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S I
$\mathbf{B_{101}}$	$=$	$x_{26}\,\mathbf{a}_1+y_{26}\,\mathbf{a}_2+z_{26}\,\mathbf{a}_3$	$=$	$ax_{26}\,\hat{\mathbf{x}}+by_{26}\,\hat{\mathbf{y}}+cz_{26}\,\hat{\mathbf{z}}$	(4a)	S II
$\mathbf{B_{102}}$	$=$	$-x_{26}\,\mathbf{a}_1-y_{26}\,\mathbf{a}_2+\left(z_{26}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{26}\,\hat{\mathbf{x}}-by_{26}\,\hat{\mathbf{y}}+c\left(z_{26}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S II
$\mathbf{B_{103}}$	$=$	$\left(x_{26}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{26}\,\mathbf{a}_2+z_{26}\,\mathbf{a}_3$	$=$	$a\left(x_{26}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{26}\,\hat{\mathbf{y}}+cz_{26}\,\hat{\mathbf{z}}$	(4a)	S II
$\mathbf{B_{104}}$	$=$	$-\left(x_{26}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{26}\,\mathbf{a}_2+\left(z_{26}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{26}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{26}\,\hat{\mathbf{y}}+c\left(z_{26}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S II
$\mathbf{B_{105}}$	$=$	$x_{27}\,\mathbf{a}_1+y_{27}\,\mathbf{a}_2+z_{27}\,\mathbf{a}_3$	$=$	$ax_{27}\,\hat{\mathbf{x}}+by_{27}\,\hat{\mathbf{y}}+cz_{27}\,\hat{\mathbf{z}}$	(4a)	S III
$\mathbf{B_{106}}$	$=$	$-x_{27}\,\mathbf{a}_1-y_{27}\,\mathbf{a}_2+\left(z_{27}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{27}\,\hat{\mathbf{x}}-by_{27}\,\hat{\mathbf{y}}+c\left(z_{27}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S III
$\mathbf{B_{107}}$	$=$	$\left(x_{27}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{27}\,\mathbf{a}_2+z_{27}\,\mathbf{a}_3$	$=$	$a\left(x_{27}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{27}\,\hat{\mathbf{y}}+cz_{27}\,\hat{\mathbf{z}}$	(4a)	S III
$\mathbf{B_{108}}$	$=$	$-\left(x_{27}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{27}\,\mathbf{a}_2+\left(z_{27}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{27}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{27}\,\hat{\mathbf{y}}+c\left(z_{27}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S III
$\mathbf{B_{109}}$	$=$	$x_{28}\,\mathbf{a}_1+y_{28}\,\mathbf{a}_2+z_{28}\,\mathbf{a}_3$	$=$	$ax_{28}\,\hat{\mathbf{x}}+by_{28}\,\hat{\mathbf{y}}+cz_{28}\,\hat{\mathbf{z}}$	(4a)	S IV
$\mathbf{B_{110}}$	$=$	$-x_{28}\,\mathbf{a}_1-y_{28}\,\mathbf{a}_2+\left(z_{28}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{28}\,\hat{\mathbf{x}}-by_{28}\,\hat{\mathbf{y}}+c\left(z_{28}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S IV
$\mathbf{B_{111}}$	$=$	$\left(x_{28}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{28}\,\mathbf{a}_2+z_{28}\,\mathbf{a}_3$	$=$	$a\left(x_{28}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{28}\,\hat{\mathbf{y}}+cz_{28}\,\hat{\mathbf{z}}$	(4a)	S IV
$\mathbf{B_{112}}$	$=$	$-\left(x_{28}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{28}\,\mathbf{a}_2+\left(z_{28}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{28}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{28}\,\hat{\mathbf{y}}+c\left(z_{28}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S IV
$\mathbf{B_{113}}$	$=$	$x_{29}\,\mathbf{a}_1+y_{29}\,\mathbf{a}_2+z_{29}\,\mathbf{a}_3$	$=$	$ax_{29}\,\hat{\mathbf{x}}+by_{29}\,\hat{\mathbf{y}}+cz_{29}\,\hat{\mathbf{z}}$	(4a)	S V
$\mathbf{B_{114}}$	$=$	$-x_{29}\,\mathbf{a}_1-y_{29}\,\mathbf{a}_2+\left(z_{29}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{29}\,\hat{\mathbf{x}}-by_{29}\,\hat{\mathbf{y}}+c\left(z_{29}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S V
$\mathbf{B_{115}}$	$=$	$\left(x_{29}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{29}\,\mathbf{a}_2+z_{29}\,\mathbf{a}_3$	$=$	$a\left(x_{29}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{29}\,\hat{\mathbf{y}}+cz_{29}\,\hat{\mathbf{z}}$	(4a)	S V
$\mathbf{B_{116}}$	$=$	$-\left(x_{29}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{29}\,\mathbf{a}_2+\left(z_{29}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{29}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{29}\,\hat{\mathbf{y}}+c\left(z_{29}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S V
$\mathbf{B_{117}}$	$=$	$x_{30}\,\mathbf{a}_1+y_{30}\,\mathbf{a}_2+z_{30}\,\mathbf{a}_3$	$=$	$ax_{30}\,\hat{\mathbf{x}}+by_{30}\,\hat{\mathbf{y}}+cz_{30}\,\hat{\mathbf{z}}$	(4a)	S VI
$\mathbf{B_{118}}$	$=$	$-x_{30}\,\mathbf{a}_1-y_{30}\,\mathbf{a}_2+\left(z_{30}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{30}\,\hat{\mathbf{x}}-by_{30}\,\hat{\mathbf{y}}+c\left(z_{30}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S VI
$\mathbf{B_{119}}$	$=$	$\left(x_{30}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{30}\,\mathbf{a}_2+z_{30}\,\mathbf{a}_3$	$=$	$a\left(x_{30}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{30}\,\hat{\mathbf{y}}+cz_{30}\,\hat{\mathbf{z}}$	(4a)	S VI
$\mathbf{B_{120}}$	$=$	$-\left(x_{30}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{30}\,\mathbf{a}_2+\left(z_{30}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{30}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{30}\,\hat{\mathbf{y}}+c\left(z_{30}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S VI
$\mathbf{B_{121}}$	$=$	$x_{31}\,\mathbf{a}_1+y_{31}\,\mathbf{a}_2+z_{31}\,\mathbf{a}_3$	$=$	$ax_{31}\,\hat{\mathbf{x}}+by_{31}\,\hat{\mathbf{y}}+cz_{31}\,\hat{\mathbf{z}}$	(4a)	S VII
$\mathbf{B_{122}}$	$=$	$-x_{31}\,\mathbf{a}_1-y_{31}\,\mathbf{a}_2+\left(z_{31}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{31}\,\hat{\mathbf{x}}-by_{31}\,\hat{\mathbf{y}}+c\left(z_{31}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S VII
$\mathbf{B_{123}}$	$=$	$\left(x_{31}+\frac{1}{2}\right)\,\mathbf{a}_1-y_{31}\,\mathbf{a}_2+z_{31}\,\mathbf{a}_3$	$=$	$a\left(x_{31}+\frac{1}{2}\right)\,\hat{\mathbf{x}}-by_{31}\,\hat{\mathbf{y}}+cz_{31}\,\hat{\mathbf{z}}$	(4a)	S VII
$\mathbf{B_{124}}$	$=$	$-\left(x_{31}-\frac{1}{2}\right)\,\mathbf{a}_1+y_{31}\,\mathbf{a}_2+\left(z_{31}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{31}-\frac{1}{2}\right)\,\hat{\mathbf{x}}+by_{31}\,\hat{\mathbf{y}}+c\left(z_{31}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S VII
$\mathbf{B_{125}}$	$=$	$x_{32}\,\mathbf{a}_1+y_{32}\,\mathbf{a}_2+z_{32}\,\mathbf{a}_3$	$=$	$ax_{32}\,\hat{\mathbf{x}}+by_{32}\,\hat{\mathbf{y}}+cz_{32}\,\hat{\mathbf{z}}$	(4a)	S VIII

$\mathbf{B_{126}} =$	$-x_{32}\,\mathbf{a}_1 - y_{32}\,\mathbf{a}_2 + \left(z_{32}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{32}\,\hat{\mathbf{x}} - by_{32}\,\hat{\mathbf{y}} + c\left(z_{32}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S VIII
$\mathbf{B_{127}} =$	$\left(x_{32}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{32}\,\mathbf{a}_2 + z_{32}\,\mathbf{a}_3$	$=$	$a\left(x_{32}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{32}\,\hat{\mathbf{y}} + cz_{32}\,\hat{\mathbf{z}}$	(4a)	S VIII
$\mathbf{B_{128}} =$	$-\left(x_{32}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{32}\,\mathbf{a}_2 + \left(z_{32}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{32}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{32}\,\hat{\mathbf{y}} + c\left(z_{32}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S VIII
$\mathbf{B_{129}} =$	$x_{33}\,\mathbf{a}_1 + y_{33}\,\mathbf{a}_2 + z_{33}\,\mathbf{a}_3$	$=$	$ax_{33}\,\hat{\mathbf{x}} + by_{33}\,\hat{\mathbf{y}} + cz_{33}\,\hat{\mathbf{z}}$	(4a)	S IX
$\mathbf{B_{130}} =$	$-x_{33}\,\mathbf{a}_1 - y_{33}\,\mathbf{a}_2 + \left(z_{33}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{33}\,\hat{\mathbf{x}} - by_{33}\,\hat{\mathbf{y}} + c\left(z_{33}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S IX
$\mathbf{B_{131}} =$	$\left(x_{33}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{33}\,\mathbf{a}_2 + z_{33}\,\mathbf{a}_3$	$=$	$a\left(x_{33}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{33}\,\hat{\mathbf{y}} + cz_{33}\,\hat{\mathbf{z}}$	(4a)	S IX
$\mathbf{B_{132}} =$	$-\left(x_{33}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{33}\,\mathbf{a}_2 + \left(z_{33}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{33}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{33}\,\hat{\mathbf{y}} + c\left(z_{33}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S IX
$\mathbf{B_{133}} =$	$x_{34}\,\mathbf{a}_1 + y_{34}\,\mathbf{a}_2 + z_{34}\,\mathbf{a}_3$	$=$	$ax_{34}\,\hat{\mathbf{x}} + by_{34}\,\hat{\mathbf{y}} + cz_{34}\,\hat{\mathbf{z}}$	(4a)	S X
$\mathbf{B_{134}} =$	$-x_{34}\,\mathbf{a}_1 - y_{34}\,\mathbf{a}_2 + \left(z_{34}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{34}\,\hat{\mathbf{x}} - by_{34}\,\hat{\mathbf{y}} + c\left(z_{34}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S X
$\mathbf{B_{135}} =$	$\left(x_{34}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{34}\,\mathbf{a}_2 + z_{34}\,\mathbf{a}_3$	$=$	$a\left(x_{34}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{34}\,\hat{\mathbf{y}} + cz_{34}\,\hat{\mathbf{z}}$	(4a)	S X
$\mathbf{B_{136}} =$	$-\left(x_{34}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{34}\,\mathbf{a}_2 + \left(z_{34}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{34}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{34}\,\hat{\mathbf{y}} + c\left(z_{34}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S X
$\mathbf{B_{137}} =$	$x_{35}\,\mathbf{a}_1 + y_{35}\,\mathbf{a}_2 + z_{35}\,\mathbf{a}_3$	$=$	$ax_{35}\,\hat{\mathbf{x}} + by_{35}\,\hat{\mathbf{y}} + cz_{35}\,\hat{\mathbf{z}}$	(4a)	S XI
$\mathbf{B_{138}} =$	$-x_{35}\,\mathbf{a}_1 - y_{35}\,\mathbf{a}_2 + \left(z_{35}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{35}\,\hat{\mathbf{x}} - by_{35}\,\hat{\mathbf{y}} + c\left(z_{35}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S XI
$\mathbf{B_{139}} =$	$\left(x_{35}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{35}\,\mathbf{a}_2 + z_{35}\,\mathbf{a}_3$	$=$	$a\left(x_{35}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{35}\,\hat{\mathbf{y}} + cz_{35}\,\hat{\mathbf{z}}$	(4a)	S XI
$\mathbf{B_{140}} =$	$-\left(x_{35}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{35}\,\mathbf{a}_2 + \left(z_{35}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{35}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{35}\,\hat{\mathbf{y}} + c\left(z_{35}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S XI
$\mathbf{B_{141}} =$	$x_{36}\,\mathbf{a}_1 + y_{36}\,\mathbf{a}_2 + z_{36}\,\mathbf{a}_3$	$=$	$ax_{36}\,\hat{\mathbf{x}} + by_{36}\,\hat{\mathbf{y}} + cz_{36}\,\hat{\mathbf{z}}$	(4a)	S XII
$\mathbf{B_{142}} =$	$-x_{36}\,\mathbf{a}_1 - y_{36}\,\mathbf{a}_2 + \left(z_{36}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{36}\,\hat{\mathbf{x}} - by_{36}\,\hat{\mathbf{y}} + c\left(z_{36}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S XII
$\mathbf{B_{143}} =$	$\left(x_{36}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{36}\,\mathbf{a}_2 + z_{36}\,\mathbf{a}_3$	$=$	$a\left(x_{36}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{36}\,\hat{\mathbf{y}} + cz_{36}\,\hat{\mathbf{z}}$	(4a)	S XII
$\mathbf{B_{144}} =$	$-\left(x_{36}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{36}\,\mathbf{a}_2 + \left(z_{36}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{36}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{36}\,\hat{\mathbf{y}} + c\left(z_{36}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S XII
$\mathbf{B_{145}} =$	$x_{37}\,\mathbf{a}_1 + y_{37}\,\mathbf{a}_2 + z_{37}\,\mathbf{a}_3$	$=$	$ax_{37}\,\hat{\mathbf{x}} + by_{37}\,\hat{\mathbf{y}} + cz_{37}\,\hat{\mathbf{z}}$	(4a)	S XIII
$\mathbf{B_{146}} =$	$-x_{37}\,\mathbf{a}_1 - y_{37}\,\mathbf{a}_2 + \left(z_{37}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{37}\,\hat{\mathbf{x}} - by_{37}\,\hat{\mathbf{y}} + c\left(z_{37}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S XIII
$\mathbf{B_{147}} =$	$\left(x_{37}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{37}\,\mathbf{a}_2 + z_{37}\,\mathbf{a}_3$	$=$	$a\left(x_{37}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{37}\,\hat{\mathbf{y}} + cz_{37}\,\hat{\mathbf{z}}$	(4a)	S XIII
$\mathbf{B_{148}} =$	$-\left(x_{37}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{37}\,\mathbf{a}_2 + \left(z_{37}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{37}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{37}\,\hat{\mathbf{y}} + c\left(z_{37}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S XIII
$\mathbf{B_{149}} =$	$x_{38}\,\mathbf{a}_1 + y_{38}\,\mathbf{a}_2 + z_{38}\,\mathbf{a}_3$	$=$	$ax_{38}\,\hat{\mathbf{x}} + by_{38}\,\hat{\mathbf{y}} + cz_{38}\,\hat{\mathbf{z}}$	(4a)	S XIV
$\mathbf{B_{150}} =$	$-x_{38}\,\mathbf{a}_1 - y_{38}\,\mathbf{a}_2 + \left(z_{38}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{38}\,\hat{\mathbf{x}} - by_{38}\,\hat{\mathbf{y}} + c\left(z_{38}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S XIV
$\mathbf{B_{151}} =$	$\left(x_{38}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{38}\,\mathbf{a}_2 + z_{38}\,\mathbf{a}_3$	$=$	$a\left(x_{38}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{38}\,\hat{\mathbf{y}} + cz_{38}\,\hat{\mathbf{z}}$	(4a)	S XIV
$\mathbf{B_{152}} =$	$-\left(x_{38}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{38}\,\mathbf{a}_2 + \left(z_{38}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{38}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{38}\,\hat{\mathbf{y}} + c\left(z_{38}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S XIV
$\mathbf{B_{153}} =$	$x_{39}\,\mathbf{a}_1 + y_{39}\,\mathbf{a}_2 + z_{39}\,\mathbf{a}_3$	$=$	$ax_{39}\,\hat{\mathbf{x}} + by_{39}\,\hat{\mathbf{y}} + cz_{39}\,\hat{\mathbf{z}}$	(4a)	S XV
$\mathbf{B_{154}} =$	$-x_{39}\,\mathbf{a}_1 - y_{39}\,\mathbf{a}_2 + \left(z_{39}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{39}\,\hat{\mathbf{x}} - by_{39}\,\hat{\mathbf{y}} + c\left(z_{39}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S XV
$\mathbf{B_{155}} =$	$\left(x_{39}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{39}\,\mathbf{a}_2 + z_{39}\,\mathbf{a}_3$	$=$	$a\left(x_{39}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{39}\,\hat{\mathbf{y}} + cz_{39}\,\hat{\mathbf{z}}$	(4a)	S XV
$\mathbf{B_{156}} =$	$-\left(x_{39}-\frac{1}{2}\right)\,\mathbf{a}_1 + y_{39}\,\mathbf{a}_2 + \left(z_{39}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{39}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{39}\,\hat{\mathbf{y}} + c\left(z_{39}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S XV
$\mathbf{B_{157}} =$	$x_{40}\,\mathbf{a}_1 + y_{40}\,\mathbf{a}_2 + z_{40}\,\mathbf{a}_3$	$=$	$ax_{40}\,\hat{\mathbf{x}} + by_{40}\,\hat{\mathbf{y}} + cz_{40}\,\hat{\mathbf{z}}$	(4a)	S XVI
$\mathbf{B_{158}} =$	$-x_{40}\,\mathbf{a}_1 - y_{40}\,\mathbf{a}_2 + \left(z_{40}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-ax_{40}\,\hat{\mathbf{x}} - by_{40}\,\hat{\mathbf{y}} + c\left(z_{40}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4a)	S XVI
$\mathbf{B_{159}} =$	$\left(x_{40}+\frac{1}{2}\right)\,\mathbf{a}_1 - y_{40}\,\mathbf{a}_2 + z_{40}\,\mathbf{a}_3$	$=$	$a\left(x_{40}+\frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{40}\,\hat{\mathbf{y}} + cz_{40}\,\hat{\mathbf{z}}$	(4a)	S XVI

$$\mathbf{B_{160}} = -\left(x_{40} - \tfrac{1}{2}\right)\mathbf{a}_1 + y_{40}\,\mathbf{a}_2 + \left(z_{40} + \tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{40} - \tfrac{1}{2}\right)\hat{\mathbf{x}} + by_{40}\,\hat{\mathbf{y}} + c\left(z_{40} + \tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4a) \quad \text{S XVI}$$

References

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