Anhydrous β-D-Glucose ($C_6H_{12}O_6$) Structure: AB2C_oP96_19_6a_12a_6a-002

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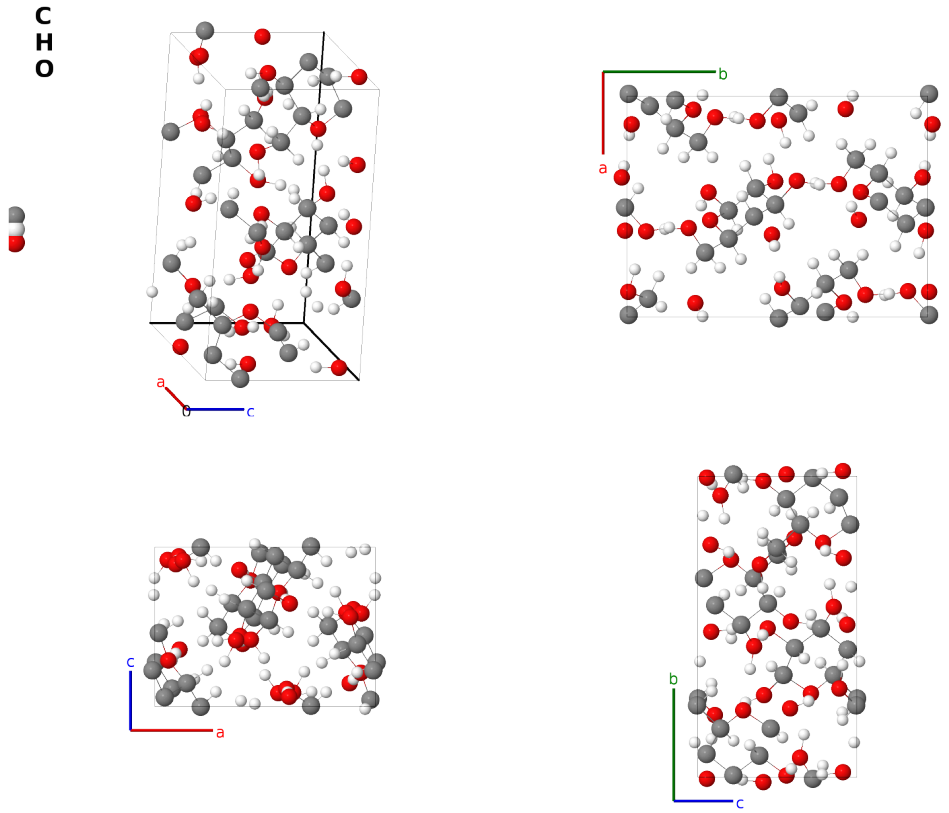
https://aflow.org/prototype-encyclopedia/S0D9

https://aflow.org/prototype-encyclopedia/AB2C_oP96_19_6a_12a_6a-002

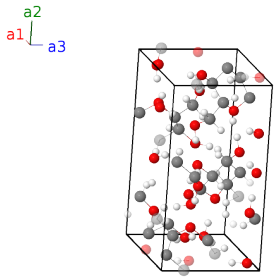


Prototype	CH_2O
AFLOW prototype label	AB2C_oP96_19_6a_12a_6a-002
Mineral name	β-D-glucose
CCDC	1169300
Pearson symbol	oP96
Space group number	19
Space group symbol	$P2_12_12_1$
AFLOW prototype command	`aflow --proto=AB2C_oP96_19_6a_12a_6a-002 --params=`$a, b/a, c/a, x_1, y_1, z_1, x_2, y_2, z_2, x_3, y_3, z_3, x_4, y_4, z_4, x_5, y_5, z_5, x_6, y_6, z_6, x_7, y_7, z_7, x_8, y_8, z_8, x_9, y_9, z_9, x_{10}, y_{10}, z_{10}, x_{11}, y_{11}, z_{11}, x_{12}, y_{12}, z_{12}, x_{13}, y_{13}, z_{13}, x_{14}, y_{14}, z_{14}, x_{15}, y_{15}, z_{15}, x_{16}, y_{16}, z_{16}, x_{17}, y_{17}, z_{17}, x_{18}, y_{18}, z_{18}, x_{19}, y_{19}, z_{19}, x_{20}, y_{20}, z_{20}, x_{21}, y_{21}, z_{21}, x_{22}, y_{22}, z_{22}, x_{23}, y_{23}, z_{23}, x_{24}, y_{24}, z_{24}$

- Anhydrous glucose can be found in nature in two forms:
  - α-D-glucose and
  - β-D-glucose (this structure), and
  - α-D-glucose monohydrate.
- This is a chiral compound.
- The "D" indicates that a solution of this form of glucose will rotate polarized light to the right, while the "L" type rotates light to the left.
- Only D-glucose is found in nature, but the L-type can be synthesized.
- As β-L-glucose is the enantiomer of β-D-glucose its structure should be a mirror image of this one, but we have not been able to find a report of its structure.
- α- and β-D-glucose have the same AFLOW prototype label, AB2C_oP96_19_6a_12a_6a. They are generated by the same symmetry operations with different sets of parameters (`--params`) specified in their corresponding CIF files.
- The hydrogen positions were approximated assuming an O-H bond length of 1Å and knowledge of hydrogen bonding.

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)	C 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)	C 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)	C 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)	C 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)	C 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)	C 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)	C 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)	C 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)	C III

$$
\begin{array}{lcccccc}
\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) & \text{C 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) & \text{C 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) & \text{C 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) & \text{C 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) & \text{C 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) & \text{C 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) & \text{C 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) & \text{C V} \\
\mathbf{B_{18}} & = & -\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) & \text{C V} \\
\mathbf{B_{19}} & = & -x_5\,\mathbf{a}_1 + \left(y_5+\frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_5-\frac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_5\,\hat{\mathbf{x}} + b\left(y_5+\frac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (4a) & \text{C V} \\
\mathbf{B_{20}} & = & \left(x_5+\frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_5-\frac{1}{2}\right)\,\mathbf{a}_2 - z_5\,\mathbf{a}_3 & = & a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_5-\frac{1}{2}\right)\,\hat{\mathbf{y}} - cz_5\,\hat{\mathbf{z}} & (4a) & \text{C 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) & \text{C VI} \\
\mathbf{B_{22}} & = & -\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) & \text{C VI} \\
\mathbf{B_{23}} & = & -x_6\,\mathbf{a}_1 + \left(y_6+\frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_6-\frac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_6\,\hat{\mathbf{x}} + b\left(y_6+\frac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (4a) & \text{C VI} \\
\mathbf{B_{24}} & = & \left(x_6+\frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_6-\frac{1}{2}\right)\,\mathbf{a}_2 - z_6\,\mathbf{a}_3 & = & a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_6-\frac{1}{2}\right)\,\hat{\mathbf{y}} - cz_6\,\hat{\mathbf{z}} & (4a) & \text{C 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) & \text{H I} \\
\mathbf{B_{26}} & = & -\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) & \text{H I} \\
\mathbf{B_{27}} & = & -x_7\,\mathbf{a}_1 + \left(y_7+\frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_7-\frac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_7\,\hat{\mathbf{x}} + b\left(y_7+\frac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (4a) & \text{H I} \\
\mathbf{B_{28}} & = & \left(x_7+\frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_7-\frac{1}{2}\right)\,\mathbf{a}_2 - z_7\,\mathbf{a}_3 & = & a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_7-\frac{1}{2}\right)\,\hat{\mathbf{y}} - cz_7\,\hat{\mathbf{z}} & (4a) & \text{H I} \\
\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) & \text{H II} \\
\mathbf{B_{30}} & = & -\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) & \text{H II} \\
\mathbf{B_{31}} & = & -x_8\,\mathbf{a}_1 + \left(y_8+\frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_8-\frac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_8\,\hat{\mathbf{x}} + b\left(y_8+\frac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_8-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (4a) & \text{H II} \\
\mathbf{B_{32}} & = & \left(x_8+\frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_8-\frac{1}{2}\right)\,\mathbf{a}_2 - z_8\,\mathbf{a}_3 & = & a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_8-\frac{1}{2}\right)\,\hat{\mathbf{y}} - cz_8\,\hat{\mathbf{z}} & (4a) & \text{H II} \\
\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) & \text{H III} \\
\mathbf{B_{34}} & = & -\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) & \text{H III} \\
\mathbf{B_{35}} & = & -x_9\,\mathbf{a}_1 + \left(y_9+\frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_9-\frac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_9\,\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}} & (4a) & \text{H III} \\
\mathbf{B_{36}} & = & \left(x_9+\frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_9-\frac{1}{2}\right)\,\mathbf{a}_2 - z_9\,\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}} - cz_9\,\hat{\mathbf{z}} & (4a) & \text{H III} \\
\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) & \text{H IV} \\
\mathbf{B_{38}} & = & -\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) & \text{H IV}
\end{array}
$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\mathbf{B_{65}} = x_{17}\,\mathbf{a}_1 + y_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3 = a x_{17}\,\hat{\mathbf{x}} + b y_{17}\,\hat{\mathbf{y}} + c z_{17}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H XI}$$

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

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

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

$$\mathbf{B_{69}} = x_{18}\,\mathbf{a}_1 + y_{18}\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3 = a x_{18}\,\hat{\mathbf{x}} + b y_{18}\,\hat{\mathbf{y}} + c z_{18}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H XII}$$

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

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

$$\mathbf{B_{72}} = \left(x_{18} + \tfrac{1}{2}\right)\,\mathbf{a}_1 - \left(y_{18} - \tfrac{1}{2}\right)\,\mathbf{a}_2 - z_{18}\,\mathbf{a}_3 = a\left(x_{18} + \tfrac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_{18} - \tfrac{1}{2}\right)\,\hat{\mathbf{y}} - c z_{18}\,\hat{\mathbf{z}} \quad (4a) \quad \text{H XII}$$

$$\mathbf{B_{73}} = x_{19}\,\mathbf{a}_1 + y_{19}\,\mathbf{a}_2 + z_{19}\,\mathbf{a}_3 = a x_{19}\,\hat{\mathbf{x}} + b y_{19}\,\hat{\mathbf{y}} + c z_{19}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O I}$$

$$\mathbf{B_{74}} = -\left(x_{19} - \tfrac{1}{2}\right)\,\mathbf{a}_1 - y_{19}\,\mathbf{a}_2 + \left(z_{19} + \tfrac{1}{2}\right)\,\mathbf{a}_3 = -a\left(x_{19} - \tfrac{1}{2}\right)\,\hat{\mathbf{x}} - b y_{19}\,\hat{\mathbf{y}} + c\left(z_{19} + \tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (4a) \quad \text{O I}$$

$$\mathbf{B_{75}} = -x_{19}\,\mathbf{a}_1 + \left(y_{19} + \tfrac{1}{2}\right)\,\mathbf{a}_2 - \left(z_{19} - \tfrac{1}{2}\right)\,\mathbf{a}_3 = -a x_{19}\,\hat{\mathbf{x}} + b\left(y_{19} + \tfrac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_{19} - \tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (4a) \quad \text{O I}$$

$$\mathbf{B_{76}} = \left(x_{19} + \tfrac{1}{2}\right)\,\mathbf{a}_1 - \left(y_{19} - \tfrac{1}{2}\right)\,\mathbf{a}_2 - z_{19}\,\mathbf{a}_3 = a\left(x_{19} + \tfrac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_{19} - \tfrac{1}{2}\right)\,\hat{\mathbf{y}} - c z_{19}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O I}$$

$$\mathbf{B_{77}} = x_{20}\,\mathbf{a}_1 + y_{20}\,\mathbf{a}_2 + z_{20}\,\mathbf{a}_3 = a x_{20}\,\hat{\mathbf{x}} + b y_{20}\,\hat{\mathbf{y}} + c z_{20}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O II}$$

$$\mathbf{B_{78}} = -\left(x_{20} - \tfrac{1}{2}\right)\,\mathbf{a}_1 - y_{20}\,\mathbf{a}_2 + \left(z_{20} + \tfrac{1}{2}\right)\,\mathbf{a}_3 = -a\left(x_{20} - \tfrac{1}{2}\right)\,\hat{\mathbf{x}} - b y_{20}\,\hat{\mathbf{y}} + c\left(z_{20} + \tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (4a) \quad \text{O II}$$

$$\mathbf{B_{79}} = -x_{20}\,\mathbf{a}_1 + \left(y_{20} + \tfrac{1}{2}\right)\,\mathbf{a}_2 - \left(z_{20} - \tfrac{1}{2}\right)\,\mathbf{a}_3 = -a x_{20}\,\hat{\mathbf{x}} + b\left(y_{20} + \tfrac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_{20} - \tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (4a) \quad \text{O II}$$

$$\mathbf{B_{80}} = \left(x_{20} + \tfrac{1}{2}\right)\,\mathbf{a}_1 - \left(y_{20} - \tfrac{1}{2}\right)\,\mathbf{a}_2 - z_{20}\,\mathbf{a}_3 = a\left(x_{20} + \tfrac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_{20} - \tfrac{1}{2}\right)\,\hat{\mathbf{y}} - c z_{20}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O II}$$

$$\mathbf{B_{81}} = x_{21}\,\mathbf{a}_1 + y_{21}\,\mathbf{a}_2 + z_{21}\,\mathbf{a}_3 = a x_{21}\,\hat{\mathbf{x}} + b y_{21}\,\hat{\mathbf{y}} + c z_{21}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O III}$$

$$\mathbf{B_{82}} = -\left(x_{21} - \tfrac{1}{2}\right)\,\mathbf{a}_1 - y_{21}\,\mathbf{a}_2 + \left(z_{21} + \tfrac{1}{2}\right)\,\mathbf{a}_3 = -a\left(x_{21} - \tfrac{1}{2}\right)\,\hat{\mathbf{x}} - b y_{21}\,\hat{\mathbf{y}} + c\left(z_{21} + \tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (4a) \quad \text{O III}$$

$$\mathbf{B_{83}} = -x_{21}\,\mathbf{a}_1 + \left(y_{21} + \tfrac{1}{2}\right)\,\mathbf{a}_2 - \left(z_{21} - \tfrac{1}{2}\right)\,\mathbf{a}_3 = -a x_{21}\,\hat{\mathbf{x}} + b\left(y_{21} + \tfrac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_{21} - \tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (4a) \quad \text{O III}$$

$$\mathbf{B_{84}} = \left(x_{21} + \tfrac{1}{2}\right)\,\mathbf{a}_1 - \left(y_{21} - \tfrac{1}{2}\right)\,\mathbf{a}_2 - z_{21}\,\mathbf{a}_3 = a\left(x_{21} + \tfrac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_{21} - \tfrac{1}{2}\right)\,\hat{\mathbf{y}} - c z_{21}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O III}$$

$$\mathbf{B_{85}} = x_{22}\,\mathbf{a}_1 + y_{22}\,\mathbf{a}_2 + z_{22}\,\mathbf{a}_3 = a x_{22}\,\hat{\mathbf{x}} + b y_{22}\,\hat{\mathbf{y}} + c z_{22}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O IV}$$

$$\mathbf{B_{86}} = -\left(x_{22} - \tfrac{1}{2}\right)\,\mathbf{a}_1 - y_{22}\,\mathbf{a}_2 + \left(z_{22} + \tfrac{1}{2}\right)\,\mathbf{a}_3 = -a\left(x_{22} - \tfrac{1}{2}\right)\,\hat{\mathbf{x}} - b y_{22}\,\hat{\mathbf{y}} + c\left(z_{22} + \tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (4a) \quad \text{O IV}$$

$$\mathbf{B_{87}} = -x_{22}\,\mathbf{a}_1 + \left(y_{22} + \tfrac{1}{2}\right)\,\mathbf{a}_2 - \left(z_{22} - \tfrac{1}{2}\right)\,\mathbf{a}_3 = -a x_{22}\,\hat{\mathbf{x}} + b\left(y_{22} + \tfrac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_{22} - \tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (4a) \quad \text{O IV}$$

$$\mathbf{B_{88}} = \left(x_{22} + \tfrac{1}{2}\right)\,\mathbf{a}_1 - \left(y_{22} - \tfrac{1}{2}\right)\,\mathbf{a}_2 - z_{22}\,\mathbf{a}_3 = a\left(x_{22} + \tfrac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_{22} - \tfrac{1}{2}\right)\,\hat{\mathbf{y}} - c z_{22}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O IV}$$

$$\mathbf{B_{89}} = x_{23}\,\mathbf{a}_1 + y_{23}\,\mathbf{a}_2 + z_{23}\,\mathbf{a}_3 = a x_{23}\,\hat{\mathbf{x}} + b y_{23}\,\hat{\mathbf{y}} + c z_{23}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O V}$$

$$\mathbf{B_{90}} = -\left(x_{23} - \tfrac{1}{2}\right)\,\mathbf{a}_1 - y_{23}\,\mathbf{a}_2 + \left(z_{23} + \tfrac{1}{2}\right)\,\mathbf{a}_3 = -a\left(x_{23} - \tfrac{1}{2}\right)\,\hat{\mathbf{x}} - b y_{23}\,\hat{\mathbf{y}} + c\left(z_{23} + \tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (4a) \quad \text{O V}$$

$$\mathbf{B_{91}} = -x_{23}\,\mathbf{a}_1 + \left(y_{23}+\tfrac{1}{2}\right)\,\mathbf{a}_2 - \left(z_{23}-\tfrac{1}{2}\right)\,\mathbf{a}_3 = -ax_{23}\,\hat{\mathbf{x}} + b\left(y_{23}+\tfrac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_{23}-\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (4a) \quad \text{O V}$$

$$\mathbf{B_{92}} = \left(x_{23}+\tfrac{1}{2}\right)\,\mathbf{a}_1 - \left(y_{23}-\tfrac{1}{2}\right)\,\mathbf{a}_2 - z_{23}\,\mathbf{a}_3 = a\left(x_{23}+\tfrac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_{23}-\tfrac{1}{2}\right)\,\hat{\mathbf{y}} - cz_{23}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O V}$$

$$\mathbf{B_{93}} = x_{24}\,\mathbf{a}_1 + y_{24}\,\mathbf{a}_2 + z_{24}\,\mathbf{a}_3 = ax_{24}\,\hat{\mathbf{x}} + by_{24}\,\hat{\mathbf{y}} + cz_{24}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O VI}$$

$$\mathbf{B_{94}} = -\left(x_{24}-\tfrac{1}{2}\right)\,\mathbf{a}_1 - y_{24}\,\mathbf{a}_2 + \left(z_{24}+\tfrac{1}{2}\right)\,\mathbf{a}_3 = -a\left(x_{24}-\tfrac{1}{2}\right)\,\hat{\mathbf{x}} - by_{24}\,\hat{\mathbf{y}} + c\left(z_{24}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (4a) \quad \text{O VI}$$

$$\mathbf{B_{95}} = -x_{24}\,\mathbf{a}_1 + \left(y_{24}+\tfrac{1}{2}\right)\,\mathbf{a}_2 - \left(z_{24}-\tfrac{1}{2}\right)\,\mathbf{a}_3 = -ax_{24}\,\hat{\mathbf{x}} + b\left(y_{24}+\tfrac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_{24}-\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (4a) \quad \text{O VI}$$

$$\mathbf{B_{96}} = \left(x_{24}+\tfrac{1}{2}\right)\,\mathbf{a}_1 - \left(y_{24}-\tfrac{1}{2}\right)\,\mathbf{a}_2 - z_{24}\,\mathbf{a}_3 = a\left(x_{24}+\tfrac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_{24}-\tfrac{1}{2}\right)\,\hat{\mathbf{y}} - cz_{24}\,\hat{\mathbf{z}} \quad (4a) \quad \text{O VI}$$

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