$Bi_3Ru_3O_{11}$ Structure: A3B11C3_cP68_201_be_efh_g-001

This structure previously used the label(s) `A3B11C3_cP68_201_be_efh_g`. Calls to these addresses will be redirected here.

Cite this page as:

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- D. Hicks, M. J. Mehl, M. Esters, C. Oses, O. Levy, G. L. W. Hart, C. Toher, and S. Curtarolo, *The AFLOW Library of Crystallographic Prototypes: Part 3*, Comput. Mater. Sci. **199**, 110450 (2021), doi: 10.1016/j.commatsci.2021.110450.

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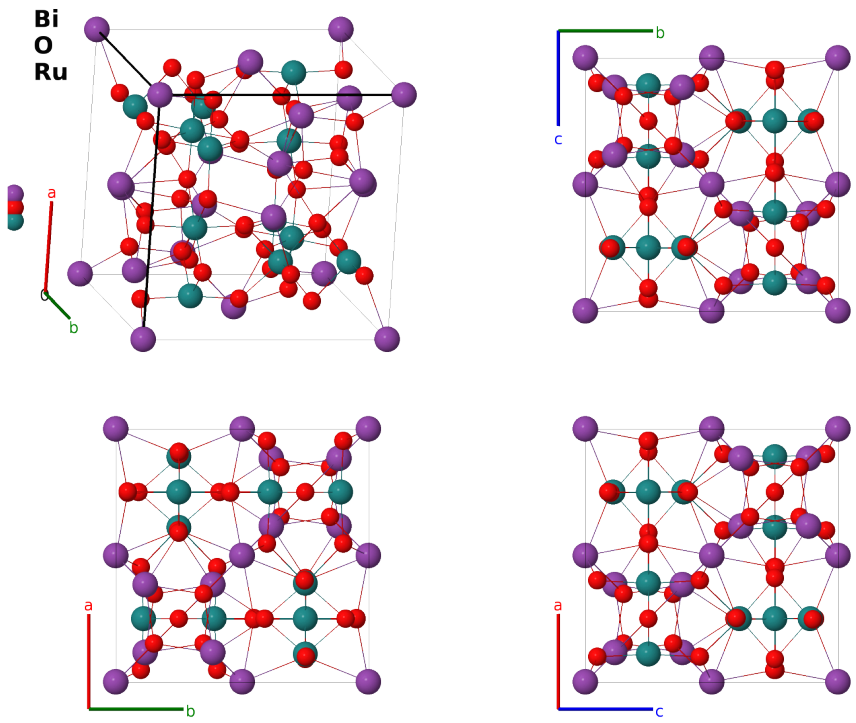
https://aflow.org/prototype-encyclopedia/0WEU

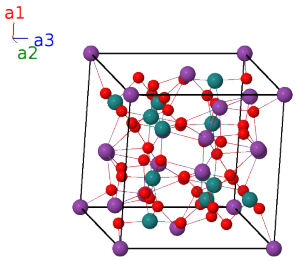
https://aflow.org/prototype-encyclopedia/A3B11C3_cP68_201_be_efh_g-001



Prototype	$Bi_3O_{11}Ru_3$
AFLOW prototype label	A3B11C3_cP68_201_be_efh_g-001
ICSD	4194
CCDC	1592879
Pearson symbol	cP68
Space group number	201
Space group symbol	$Pn\overline{3}$
AFLOW prototype command	`aflow --proto=A3B11C3_cP68_201_be_efh_g-001 --params=`$a, x_2, x_3, x_4, x_5, x_6, y_6, z_6$

Simple Cubic primitive vectors

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



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	0	=	0	(4b)	Bi I
$\mathbf{B_2}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}}$	(4b)	Bi I
$\mathbf{B_3}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(4b)	Bi I
$\mathbf{B_4}$	=	$\frac{1}{2}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(4b)	Bi I
$\mathbf{B_5}$	=	$x_2\,\mathbf{a}_1 + x_2\,\mathbf{a}_2 + x_2\,\mathbf{a}_3$	=	$ax_2\,\hat{\mathbf{x}} + ax_2\,\hat{\mathbf{y}} + ax_2\,\hat{\mathbf{z}}$	(8e)	Bi II
$\mathbf{B_6}$	=	$-\left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_2 + x_2\,\mathbf{a}_3$	=	$-a\left(x_2 - \frac{1}{2}\right)\,\hat{\mathbf{x}} - a\left(x_2 - \frac{1}{2}\right)\,\hat{\mathbf{y}} + ax_2\,\hat{\mathbf{z}}$	(8e)	Bi II
$\mathbf{B_7}$	=	$-\left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_1 + x_2\,\mathbf{a}_2 - \left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_2 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + ax_2\,\hat{\mathbf{y}} - a\left(x_2 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	Bi II
$\mathbf{B_8}$	=	$x_2\,\mathbf{a}_1 - \left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_2\,\hat{\mathbf{x}} - a\left(x_2 - \frac{1}{2}\right)\,\hat{\mathbf{y}} - a\left(x_2 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	Bi II
$\mathbf{B_9}$	=	$-x_2\,\mathbf{a}_1 - x_2\,\mathbf{a}_2 - x_2\,\mathbf{a}_3$	=	$-ax_2\,\hat{\mathbf{x}} - ax_2\,\hat{\mathbf{y}} - ax_2\,\hat{\mathbf{z}}$	(8e)	Bi II
$\mathbf{B_{10}}$	=	$\left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_2 - x_2\,\mathbf{a}_3$	=	$a\left(x_2 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + a\left(x_2 + \frac{1}{2}\right)\,\hat{\mathbf{y}} - ax_2\,\hat{\mathbf{z}}$	(8e)	Bi II
$\mathbf{B_{11}}$	=	$\left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_1 - x_2\,\mathbf{a}_2 + \left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_2 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - ax_2\,\hat{\mathbf{y}} + a\left(x_2 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	Bi II
$\mathbf{B_{12}}$	=	$-x_2\,\mathbf{a}_1 + \left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_2\,\hat{\mathbf{x}} + a\left(x_2 + \frac{1}{2}\right)\,\hat{\mathbf{y}} + a\left(x_2 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	Bi II
$\mathbf{B_{13}}$	=	$x_3\,\mathbf{a}_1 + x_3\,\mathbf{a}_2 + x_3\,\mathbf{a}_3$	=	$ax_3\,\hat{\mathbf{x}} + ax_3\,\hat{\mathbf{y}} + ax_3\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{14}}$	=	$-\left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_2 + x_3\,\mathbf{a}_3$	=	$-a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{x}} - a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{y}} + ax_3\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{15}}$	=	$-\left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_1 + x_3\,\mathbf{a}_2 - \left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + ax_3\,\hat{\mathbf{y}} - a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{16}}$	=	$x_3\,\mathbf{a}_1 - \left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_3\,\hat{\mathbf{x}} - a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{y}} - a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{17}}$	=	$-x_3\,\mathbf{a}_1 - x_3\,\mathbf{a}_2 - x_3\,\mathbf{a}_3$	=	$-ax_3\,\hat{\mathbf{x}} - ax_3\,\hat{\mathbf{y}} - ax_3\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{18}}$	=	$\left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_2 - x_3\,\mathbf{a}_3$	=	$a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{y}} - ax_3\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{19}}$	=	$\left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_1 - x_3\,\mathbf{a}_2 + \left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - ax_3\,\hat{\mathbf{y}} + a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{20}}$	=	$-x_3\,\mathbf{a}_1 + \left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_3\,\hat{\mathbf{x}} + a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{y}} + a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{21}}$	=	$x_4\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$ax_4\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(12f)	O II
$\mathbf{B_{22}}$	=	$-\left(x_4 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$-a\left(x_4 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(12f)	O II
$\mathbf{B_{23}}$	=	$\frac{1}{4}\,\mathbf{a}_1 + x_4\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + ax_4\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(12f)	O II
$\mathbf{B_{24}}$	=	$\frac{1}{4}\,\mathbf{a}_1 - \left(x_4 - \frac{1}{2}\right)\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} - a\left(x_4 - \frac{1}{2}\right)\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(12f)	O II

$$
\begin{array}{lcccccc}
\mathbf{B_{25}} & = & \frac{1}{4}\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+x_4\,\mathbf{a}_3 & = & \frac{1}{4}a\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}+ax_4\,\hat{\mathbf{z}} & (12f) & \text{O II}\\
\mathbf{B_{26}} & = & \frac{1}{4}\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-\left(x_4-\frac{1}{2}\right)\,\mathbf{a}_3 & = & \frac{1}{4}a\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}-a\left(x_4-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (12f) & \text{O II}\\
\mathbf{B_{27}} & = & -x_4\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3 & = & -ax_4\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}} & (12f) & \text{O II}\\
\mathbf{B_{28}} & = & \left(x_4+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3 & = & a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}} & (12f) & \text{O II}\\
\mathbf{B_{29}} & = & \frac{3}{4}\,\mathbf{a}_1-x_4\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3 & = & \frac{3}{4}a\,\hat{\mathbf{x}}-ax_4\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}} & (12f) & \text{O II}\\
\mathbf{B_{30}} & = & \frac{3}{4}\,\mathbf{a}_1+\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3 & = & \frac{3}{4}a\,\hat{\mathbf{x}}+a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}} & (12f) & \text{O II}\\
\mathbf{B_{31}} & = & \frac{3}{4}\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-x_4\,\mathbf{a}_3 & = & \frac{3}{4}a\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}-ax_4\,\hat{\mathbf{z}} & (12f) & \text{O II}\\
\mathbf{B_{32}} & = & \frac{3}{4}\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_3 & = & \frac{3}{4}a\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}+a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (12f) & \text{O II}\\
\mathbf{B_{33}} & = & x_5\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3 & = & ax_5\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}} & (12g) & \text{Ru I}\\
\mathbf{B_{34}} & = & -\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3 & = & -a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}} & (12g) & \text{Ru I}\\
\mathbf{B_{35}} & = & \frac{1}{4}\,\mathbf{a}_1+x_5\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3 & = & \frac{1}{4}a\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}} & (12g) & \text{Ru I}\\
\mathbf{B_{36}} & = & \frac{1}{4}\,\mathbf{a}_1-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3 & = & \frac{1}{4}a\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}} & (12g) & \text{Ru I}\\
\mathbf{B_{37}} & = & \frac{3}{4}\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+x_5\,\mathbf{a}_3 & = & \frac{3}{4}a\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}} & (12g) & \text{Ru I}\\
\mathbf{B_{38}} & = & \frac{3}{4}\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_3 & = & \frac{3}{4}a\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (12g) & \text{Ru I}\\
\mathbf{B_{39}} & = & -x_5\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3 & = & -ax_5\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}} & (12g) & \text{Ru I}\\
\mathbf{B_{40}} & = & \left(x_5+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3 & = & a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}} & (12g) & \text{Ru I}\\
\mathbf{B_{41}} & = & \frac{3}{4}\,\mathbf{a}_1-x_5\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3 & = & \frac{3}{4}a\,\hat{\mathbf{x}}-ax_5\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}} & (12g) & \text{Ru I}\\
\mathbf{B_{42}} & = & \frac{3}{4}\,\mathbf{a}_1+\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3 & = & \frac{3}{4}a\,\hat{\mathbf{x}}+a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}} & (12g) & \text{Ru I}\\
\mathbf{B_{43}} & = & \frac{1}{4}\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-x_5\,\mathbf{a}_3 & = & \frac{1}{4}a\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}-ax_5\,\hat{\mathbf{z}} & (12g) & \text{Ru I}\\
\mathbf{B_{44}} & = & \frac{1}{4}\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_3 & = & \frac{1}{4}a\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}+a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (12g) & \text{Ru I}\\
\mathbf{B_{45}} & = & x_6\,\mathbf{a}_1+y_6\,\mathbf{a}_2+z_6\,\mathbf{a}_3 & = & ax_6\,\hat{\mathbf{x}}+ay_6\,\hat{\mathbf{y}}+az_6\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{46}} & = & -\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}}-a\left(y_6-\frac{1}{2}\right)\,\hat{\mathbf{y}}+az_6\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{47}} & = & -\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}}+ay_6\,\hat{\mathbf{y}}-a\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{48}} & = & 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}}-a\left(y_6-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{49}} & = & z_6\,\mathbf{a}_1+x_6\,\mathbf{a}_2+y_6\,\mathbf{a}_3 & = & az_6\,\hat{\mathbf{x}}+ax_6\,\hat{\mathbf{y}}+ay_6\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{50}} & = & z_6\,\mathbf{a}_1-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_2-\left(y_6-\frac{1}{2}\right)\,\mathbf{a}_3 & = & az_6\,\hat{\mathbf{x}}-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(y_6-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{51}} & = & -\left(z_6-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_2+y_6\,\mathbf{a}_3 & = & -a\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ay_6\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{52}} & = & -\left(z_6-\frac{1}{2}\right)\,\mathbf{a}_1+x_6\,\mathbf{a}_2-\left(y_6-\frac{1}{2}\right)\,\mathbf{a}_3 & = & -a\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_6\,\hat{\mathbf{y}}-a\left(y_6-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{53}} & = & y_6\,\mathbf{a}_1+z_6\,\mathbf{a}_2+x_6\,\mathbf{a}_3 & = & ay_6\,\hat{\mathbf{x}}+az_6\,\hat{\mathbf{y}}+ax_6\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{54}} & = & -\left(y_6-\frac{1}{2}\right)\,\mathbf{a}_1+z_6\,\mathbf{a}_2-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_3 & = & -a\left(y_6-\frac{1}{2}\right)\,\hat{\mathbf{x}}+az_6\,\hat{\mathbf{y}}-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{55}} & = & y_6\,\mathbf{a}_1-\left(z_6-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_3 & = & ay_6\,\hat{\mathbf{x}}-a\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{56}} & = & -\left(y_6-\frac{1}{2}\right)\,\mathbf{a}_1-\left(z_6-\frac{1}{2}\right)\,\mathbf{a}_2+x_6\,\mathbf{a}_3 & = & -a\left(y_6-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_6\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{57}} & = & -x_6\,\mathbf{a}_1-y_6\,\mathbf{a}_2-z_6\,\mathbf{a}_3 & = & -ax_6\,\hat{\mathbf{x}}-ay_6\,\hat{\mathbf{y}}-az_6\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{58}} & = & \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}}+a\left(y_6+\frac{1}{2}\right)\,\hat{\mathbf{y}}-az_6\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{59}} & = & \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}}-ay_6\,\hat{\mathbf{y}}+a\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24h) & \text{O III}\\
\mathbf{B_{60}} & = & -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}}+a\left(y_6+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24h) & \text{O III}
\end{array}
$$

$\mathbf{B_{61}}$	=	$-z_6\,\mathbf{a}_1 - x_6\,\mathbf{a}_2 - y_6\,\mathbf{a}_3$	=	$-az_6\,\hat{\mathbf{x}} - ax_6\,\hat{\mathbf{y}} - ay_6\,\hat{\mathbf{z}}$	(24h)	O III
$\mathbf{B_{62}}$	=	$-z_6\,\mathbf{a}_1 + \left(x_6 + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(y_6 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-az_6\,\hat{\mathbf{x}} + a\left(x_6 + \frac{1}{2}\right)\,\hat{\mathbf{y}} + a\left(y_6 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24h)	O III
$\mathbf{B_{63}}$	=	$\left(z_6 + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(x_6 + \frac{1}{2}\right)\,\mathbf{a}_2 - y_6\,\mathbf{a}_3$	=	$a\left(z_6 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + a\left(x_6 + \frac{1}{2}\right)\,\hat{\mathbf{y}} - ay_6\,\hat{\mathbf{z}}$	(24h)	O III
$\mathbf{B_{64}}$	=	$\left(z_6 + \frac{1}{2}\right)\,\mathbf{a}_1 - x_6\,\mathbf{a}_2 + \left(y_6 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(z_6 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - ax_6\,\hat{\mathbf{y}} + a\left(y_6 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24h)	O III
$\mathbf{B_{65}}$	=	$-y_6\,\mathbf{a}_1 - z_6\,\mathbf{a}_2 - x_6\,\mathbf{a}_3$	=	$-ay_6\,\hat{\mathbf{x}} - az_6\,\hat{\mathbf{y}} - ax_6\,\hat{\mathbf{z}}$	(24h)	O III
$\mathbf{B_{66}}$	=	$\left(y_6 + \frac{1}{2}\right)\,\mathbf{a}_1 - z_6\,\mathbf{a}_2 + \left(x_6 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(y_6 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - az_6\,\hat{\mathbf{y}} + a\left(x_6 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24h)	O III
$\mathbf{B_{67}}$	=	$-y_6\,\mathbf{a}_1 + \left(z_6 + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(x_6 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_6\,\hat{\mathbf{x}} + a\left(z_6 + \frac{1}{2}\right)\,\hat{\mathbf{y}} + a\left(x_6 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24h)	O III
$\mathbf{B_{68}}$	=	$\left(y_6 + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(z_6 + \frac{1}{2}\right)\,\mathbf{a}_2 - x_6\,\mathbf{a}_3$	=	$a\left(y_6 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + a\left(z_6 + \frac{1}{2}\right)\,\hat{\mathbf{y}} - ax_6\,\hat{\mathbf{z}}$	(24h)	O III

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