

Al₈Pb₉O₂₁ Structure:

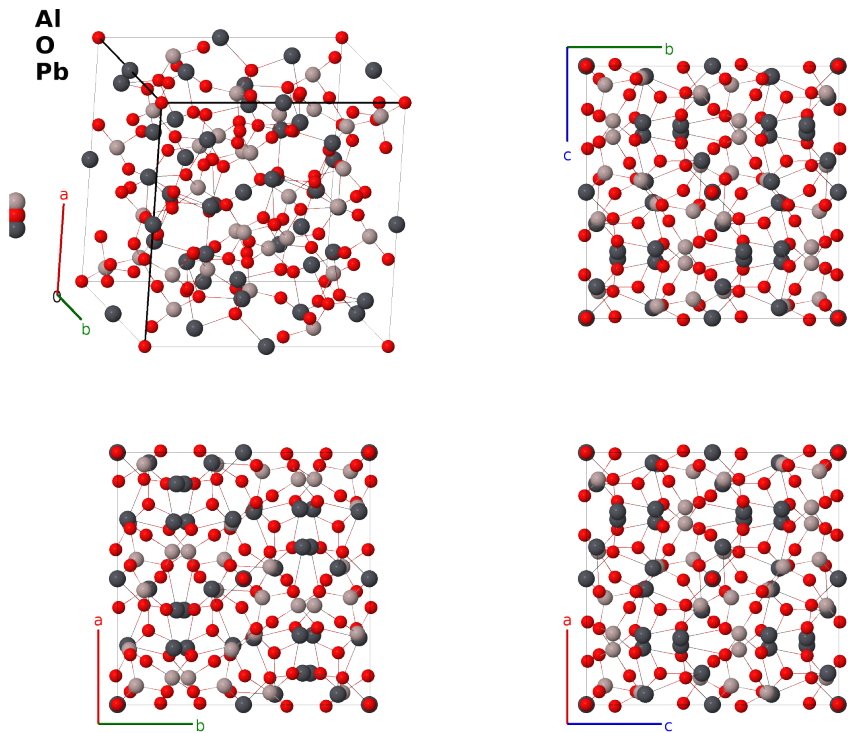
A8B21C9_cP152_205_cd_ac3d_bcd-001

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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.

<https://aflow.org/prototype-encyclopedia/RF85>

https://aflow.org/prototype-encyclopedia/A8B21C9_cP152_205_cd_ac3d_bcd-001



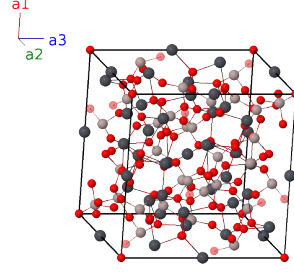
Prototype	Al ₈ O ₂₁ Pb ₉
AFLOW prototype label	A8B21C9_cP152_205_cd_ac3d_bcd-001
ICSD	24393
CCDC	1600431
Pearson symbol	cP152
Space group number	205
Space group symbol	$P\bar{a}3$
AFLOW prototype command	<pre>aflow --proto=A8B21C9_cP152_205_cd_ac3d_bcd-001 --params=a, x3, x4, x5, x6, y6, z6, x7, y7, z7, x8, y8, z8, x9, y9, z9, x10, y10, z10</pre>

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	O I
$\mathbf{B}_2$	$=$	$\frac{1}{2} \mathbf{a}_1 + \frac{1}{2} \mathbf{a}_3$	$=$	$\frac{1}{2} a \hat{\mathbf{x}} + \frac{1}{2} a \hat{\mathbf{z}}$	O I
$\mathbf{B}_3$	$=$	$\frac{1}{2} \mathbf{a}_2 + \frac{1}{2} \mathbf{a}_3$	$=$	$\frac{1}{2} a \hat{\mathbf{y}} + \frac{1}{2} a \hat{\mathbf{z}}$	O I
$\mathbf{B}_4$	$=$	$\frac{1}{2} \mathbf{a}_1 + \frac{1}{2} \mathbf{a}_2$	$=$	$\frac{1}{2} a \hat{\mathbf{x}} + \frac{1}{2} a \hat{\mathbf{y}}$	O I
$\mathbf{B}_5$	$=$	$\frac{1}{2} \mathbf{a}_1 + \frac{1}{2} \mathbf{a}_2 + \frac{1}{2} \mathbf{a}_3$	$=$	$\frac{1}{2} a \hat{\mathbf{x}} + \frac{1}{2} a \hat{\mathbf{y}} + \frac{1}{2} a \hat{\mathbf{z}}$	Pb I
$\mathbf{B}_6$	$=$	$\frac{1}{2} \mathbf{a}_2$	$=$	$\frac{1}{2} a \hat{\mathbf{y}}$	Pb I
$\mathbf{B}_7$	$=$	$\frac{1}{2} \mathbf{a}_1$	$=$	$\frac{1}{2} a \hat{\mathbf{x}}$	Pb I
$\mathbf{B}_8$	$=$	$\frac{1}{2} \mathbf{a}_3$	$=$	$\frac{1}{2} a \hat{\mathbf{z}}$	Pb I
$\mathbf{B}_9$	$=$	$x_3 \mathbf{a}_1 + x_3 \mathbf{a}_2 + x_3 \mathbf{a}_3$	$=$	$ax_3 \hat{\mathbf{x}} + ax_3 \hat{\mathbf{y}} + ax_3 \hat{\mathbf{z}}$	Al I
$\mathbf{B}_{10}$	$=$	$-(x_3 - \frac{1}{2}) \mathbf{a}_1 - x_3 \mathbf{a}_2 + (x_3 + \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(x_3 - \frac{1}{2}) \hat{\mathbf{x}} - ax_3 \hat{\mathbf{y}} + a(x_3 + \frac{1}{2}) \hat{\mathbf{z}}$	Al I
$\mathbf{B}_{11}$	$=$	$-x_3 \mathbf{a}_1 + (x_3 + \frac{1}{2}) \mathbf{a}_2 - (x_3 - \frac{1}{2}) \mathbf{a}_3$	$=$	$-ax_3 \hat{\mathbf{x}} + a(x_3 + \frac{1}{2}) \hat{\mathbf{y}} - a(x_3 - \frac{1}{2}) \hat{\mathbf{z}}$	Al I
$\mathbf{B}_{12}$	$=$	$(x_3 + \frac{1}{2}) \mathbf{a}_1 - (x_3 - \frac{1}{2}) \mathbf{a}_2 - x_3 \mathbf{a}_3$	$=$	$a(x_3 + \frac{1}{2}) \hat{\mathbf{x}} - a(x_3 - \frac{1}{2}) \hat{\mathbf{y}} - ax_3 \hat{\mathbf{z}}$	Al I
$\mathbf{B}_{13}$	$=$	$-x_3 \mathbf{a}_1 - x_3 \mathbf{a}_2 - x_3 \mathbf{a}_3$	$=$	$-ax_3 \hat{\mathbf{x}} - ax_3 \hat{\mathbf{y}} - ax_3 \hat{\mathbf{z}}$	Al I
$\mathbf{B}_{14}$	$=$	$(x_3 + \frac{1}{2}) \mathbf{a}_1 + x_3 \mathbf{a}_2 - (x_3 - \frac{1}{2}) \mathbf{a}_3$	$=$	$a(x_3 + \frac{1}{2}) \hat{\mathbf{x}} + ax_3 \hat{\mathbf{y}} - a(x_3 - \frac{1}{2}) \hat{\mathbf{z}}$	Al I
$\mathbf{B}_{15}$	$=$	$x_3 \mathbf{a}_1 - (x_3 - \frac{1}{2}) \mathbf{a}_2 + (x_3 + \frac{1}{2}) \mathbf{a}_3$	$=$	$ax_3 \hat{\mathbf{x}} - a(x_3 - \frac{1}{2}) \hat{\mathbf{y}} + a(x_3 + \frac{1}{2}) \hat{\mathbf{z}}$	Al I
$\mathbf{B}_{16}$	$=$	$-(x_3 - \frac{1}{2}) \mathbf{a}_1 + (x_3 + \frac{1}{2}) \mathbf{a}_2 + x_3 \mathbf{a}_3$	$=$	$-a(x_3 - \frac{1}{2}) \hat{\mathbf{x}} + a(x_3 + \frac{1}{2}) \hat{\mathbf{y}} + ax_3 \hat{\mathbf{z}}$	Al I
$\mathbf{B}_{17}$	$=$	$x_4 \mathbf{a}_1 + x_4 \mathbf{a}_2 + x_4 \mathbf{a}_3$	$=$	$ax_4 \hat{\mathbf{x}} + ax_4 \hat{\mathbf{y}} + ax_4 \hat{\mathbf{z}}$	O II
$\mathbf{B}_{18}$	$=$	$-(x_4 - \frac{1}{2}) \mathbf{a}_1 - x_4 \mathbf{a}_2 + (x_4 + \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(x_4 - \frac{1}{2}) \hat{\mathbf{x}} - ax_4 \hat{\mathbf{y}} + a(x_4 + \frac{1}{2}) \hat{\mathbf{z}}$	O II
$\mathbf{B}_{19}$	$=$	$-x_4 \mathbf{a}_1 + (x_4 + \frac{1}{2}) \mathbf{a}_2 - (x_4 - \frac{1}{2}) \mathbf{a}_3$	$=$	$-ax_4 \hat{\mathbf{x}} + a(x_4 + \frac{1}{2}) \hat{\mathbf{y}} - a(x_4 - \frac{1}{2}) \hat{\mathbf{z}}$	O II
$\mathbf{B}_{20}$	$=$	$(x_4 + \frac{1}{2}) \mathbf{a}_1 - (x_4 - \frac{1}{2}) \mathbf{a}_2 - x_4 \mathbf{a}_3$	$=$	$a(x_4 + \frac{1}{2}) \hat{\mathbf{x}} - a(x_4 - \frac{1}{2}) \hat{\mathbf{y}} - ax_4 \hat{\mathbf{z}}$	O II
$\mathbf{B}_{21}$	$=$	$-x_4 \mathbf{a}_1 - x_4 \mathbf{a}_2 - x_4 \mathbf{a}_3$	$=$	$-ax_4 \hat{\mathbf{x}} - ax_4 \hat{\mathbf{y}} - ax_4 \hat{\mathbf{z}}$	O II
$\mathbf{B}_{22}$	$=$	$(x_4 + \frac{1}{2}) \mathbf{a}_1 + x_4 \mathbf{a}_2 - (x_4 - \frac{1}{2}) \mathbf{a}_3$	$=$	$a(x_4 + \frac{1}{2}) \hat{\mathbf{x}} + ax_4 \hat{\mathbf{y}} - a(x_4 - \frac{1}{2}) \hat{\mathbf{z}}$	O II
$\mathbf{B}_{23}$	$=$	$x_4 \mathbf{a}_1 - (x_4 - \frac{1}{2}) \mathbf{a}_2 + (x_4 + \frac{1}{2}) \mathbf{a}_3$	$=$	$ax_4 \hat{\mathbf{x}} - a(x_4 - \frac{1}{2}) \hat{\mathbf{y}} + a(x_4 + \frac{1}{2}) \hat{\mathbf{z}}$	O II

$\mathbf{B}_{24} =$	$-\left(x_4 - \frac{1}{2}\right) \mathbf{a}_1 + \left(x_4 + \frac{1}{2}\right) \mathbf{a}_2 +$	$=$	$-a\left(x_4 - \frac{1}{2}\right) \hat{\mathbf{x}} + a\left(x_4 + \frac{1}{2}\right) \hat{\mathbf{y}} + ax_4 \hat{\mathbf{z}}$	(8c)	O II
$\mathbf{B}_{25} =$	$x_5 \mathbf{a}_1 + x_5 \mathbf{a}_2 + x_5 \mathbf{a}_3$	$=$	$ax_5 \hat{\mathbf{x}} + ax_5 \hat{\mathbf{y}} + ax_5 \hat{\mathbf{z}}$	(8c)	Pb II
$\mathbf{B}_{26} =$	$-\left(x_5 - \frac{1}{2}\right) \mathbf{a}_1 - x_5 \mathbf{a}_2 +$	$=$	$-a\left(x_5 - \frac{1}{2}\right) \hat{\mathbf{x}} - ax_5 \hat{\mathbf{y}} + a\left(x_5 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(8c)	Pb II
	$\left(x_5 + \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{27} =$	$-x_5 \mathbf{a}_1 + \left(x_5 + \frac{1}{2}\right) \mathbf{a}_2 -$	$=$	$-ax_5 \hat{\mathbf{x}} + a\left(x_5 + \frac{1}{2}\right) \hat{\mathbf{y}} - a\left(x_5 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(8c)	Pb II
	$\left(x_5 - \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{28} =$	$\left(x_5 + \frac{1}{2}\right) \mathbf{a}_1 - \left(x_5 - \frac{1}{2}\right) \mathbf{a}_2 - x_5 \mathbf{a}_3$	$=$	$a\left(x_5 + \frac{1}{2}\right) \hat{\mathbf{x}} - a\left(x_5 - \frac{1}{2}\right) \hat{\mathbf{y}} - ax_5 \hat{\mathbf{z}}$	(8c)	Pb II
$\mathbf{B}_{29} =$	$-x_5 \mathbf{a}_1 - x_5 \mathbf{a}_2 - x_5 \mathbf{a}_3$	$=$	$-ax_5 \hat{\mathbf{x}} - ax_5 \hat{\mathbf{y}} - ax_5 \hat{\mathbf{z}}$	(8c)	Pb II
$\mathbf{B}_{30} =$	$\left(x_5 + \frac{1}{2}\right) \mathbf{a}_1 + x_5 \mathbf{a}_2 - \left(x_5 - \frac{1}{2}\right) \mathbf{a}_3$	$=$	$a\left(x_5 + \frac{1}{2}\right) \hat{\mathbf{x}} + ax_5 \hat{\mathbf{y}} - a\left(x_5 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(8c)	Pb II
$\mathbf{B}_{31} =$	$x_5 \mathbf{a}_1 - \left(x_5 - \frac{1}{2}\right) \mathbf{a}_2 + \left(x_5 + \frac{1}{2}\right) \mathbf{a}_3$	$=$	$ax_5 \hat{\mathbf{x}} - a\left(x_5 - \frac{1}{2}\right) \hat{\mathbf{y}} + a\left(x_5 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(8c)	Pb II
$\mathbf{B}_{32} =$	$-\left(x_5 - \frac{1}{2}\right) \mathbf{a}_1 + \left(x_5 + \frac{1}{2}\right) \mathbf{a}_2 +$	$=$	$-a\left(x_5 - \frac{1}{2}\right) \hat{\mathbf{x}} + a\left(x_5 + \frac{1}{2}\right) \hat{\mathbf{y}} + ax_5 \hat{\mathbf{z}}$	(8c)	Pb II
	$x_5 \mathbf{a}_3$				
$\mathbf{B}_{33} =$	$x_6 \mathbf{a}_1 + y_6 \mathbf{a}_2 + z_6 \mathbf{a}_3$	$=$	$ax_6 \hat{\mathbf{x}} + ay_6 \hat{\mathbf{y}} + az_6 \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{34} =$	$-\left(x_6 - \frac{1}{2}\right) \mathbf{a}_1 - y_6 \mathbf{a}_2 +$	$=$	$-a\left(x_6 - \frac{1}{2}\right) \hat{\mathbf{x}} - ay_6 \hat{\mathbf{y}} + a\left(z_6 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	Al II
	$\left(z_6 + \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{35} =$	$-x_6 \mathbf{a}_1 + \left(y_6 + \frac{1}{2}\right) \mathbf{a}_2 -$	$=$	$-ax_6 \hat{\mathbf{x}} + a\left(y_6 + \frac{1}{2}\right) \hat{\mathbf{y}} - a\left(z_6 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	Al II
	$\left(z_6 - \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{36} =$	$\left(x_6 + \frac{1}{2}\right) \mathbf{a}_1 - \left(y_6 - \frac{1}{2}\right) \mathbf{a}_2 - z_6 \mathbf{a}_3$	$=$	$a\left(x_6 + \frac{1}{2}\right) \hat{\mathbf{x}} - a\left(y_6 - \frac{1}{2}\right) \hat{\mathbf{y}} - az_6 \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{37} =$	$z_6 \mathbf{a}_1 + x_6 \mathbf{a}_2 + y_6 \mathbf{a}_3$	$=$	$az_6 \hat{\mathbf{x}} + ax_6 \hat{\mathbf{y}} + ay_6 \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{38} =$	$\left(z_6 + \frac{1}{2}\right) \mathbf{a}_1 - \left(x_6 - \frac{1}{2}\right) \mathbf{a}_2 - y_6 \mathbf{a}_3$	$=$	$a\left(z_6 + \frac{1}{2}\right) \hat{\mathbf{x}} - a\left(x_6 - \frac{1}{2}\right) \hat{\mathbf{y}} - ay_6 \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{39} =$	$-\left(z_6 - \frac{1}{2}\right) \mathbf{a}_1 - x_6 \mathbf{a}_2 +$	$=$	$-a\left(z_6 - \frac{1}{2}\right) \hat{\mathbf{x}} - ax_6 \hat{\mathbf{y}} + a\left(y_6 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	Al II
	$\left(y_6 + \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{40} =$	$-z_6 \mathbf{a}_1 + \left(x_6 + \frac{1}{2}\right) \mathbf{a}_2 -$	$=$	$-az_6 \hat{\mathbf{x}} + a\left(x_6 + \frac{1}{2}\right) \hat{\mathbf{y}} - a\left(y_6 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	Al II
	$\left(y_6 - \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{41} =$	$y_6 \mathbf{a}_1 + z_6 \mathbf{a}_2 + x_6 \mathbf{a}_3$	$=$	$ay_6 \hat{\mathbf{x}} + az_6 \hat{\mathbf{y}} + ax_6 \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{42} =$	$-y_6 \mathbf{a}_1 + \left(z_6 + \frac{1}{2}\right) \mathbf{a}_2 -$	$=$	$-ay_6 \hat{\mathbf{x}} + a\left(z_6 + \frac{1}{2}\right) \hat{\mathbf{y}} - a\left(x_6 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	Al II
	$\left(x_6 - \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{43} =$	$\left(y_6 + \frac{1}{2}\right) \mathbf{a}_1 - \left(z_6 - \frac{1}{2}\right) \mathbf{a}_2 - x_6 \mathbf{a}_3$	$=$	$a\left(y_6 + \frac{1}{2}\right) \hat{\mathbf{x}} - a\left(z_6 - \frac{1}{2}\right) \hat{\mathbf{y}} - ax_6 \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{44} =$	$-\left(y_6 - \frac{1}{2}\right) \mathbf{a}_1 - z_6 \mathbf{a}_2 +$	$=$	$-a\left(y_6 - \frac{1}{2}\right) \hat{\mathbf{x}} - az_6 \hat{\mathbf{y}} + a\left(x_6 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	Al II
	$\left(x_6 + \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{45} =$	$-x_6 \mathbf{a}_1 - y_6 \mathbf{a}_2 - z_6 \mathbf{a}_3$	$=$	$-ax_6 \hat{\mathbf{x}} - ay_6 \hat{\mathbf{y}} - az_6 \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{46} =$	$\left(x_6 + \frac{1}{2}\right) \mathbf{a}_1 + y_6 \mathbf{a}_2 - \left(z_6 - \frac{1}{2}\right) \mathbf{a}_3$	$=$	$a\left(x_6 + \frac{1}{2}\right) \hat{\mathbf{x}} + ay_6 \hat{\mathbf{y}} - a\left(z_6 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{47} =$	$x_6 \mathbf{a}_1 - \left(y_6 - \frac{1}{2}\right) \mathbf{a}_2 + \left(z_6 + \frac{1}{2}\right) \mathbf{a}_3$	$=$	$ax_6 \hat{\mathbf{x}} - a\left(y_6 - \frac{1}{2}\right) \hat{\mathbf{y}} + a\left(z_6 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{48} =$	$-\left(x_6 - \frac{1}{2}\right) \mathbf{a}_1 + \left(y_6 + \frac{1}{2}\right) \mathbf{a}_2 +$	$=$	$-a\left(x_6 - \frac{1}{2}\right) \hat{\mathbf{x}} + a\left(y_6 + \frac{1}{2}\right) \hat{\mathbf{y}} + az_6 \hat{\mathbf{z}}$	(24d)	Al II
	$z_6 \mathbf{a}_3$				
$\mathbf{B}_{49} =$	$-z_6 \mathbf{a}_1 - x_6 \mathbf{a}_2 - y_6 \mathbf{a}_3$	$=$	$-az_6 \hat{\mathbf{x}} - ax_6 \hat{\mathbf{y}} - ay_6 \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{50} =$	$-\left(z_6 - \frac{1}{2}\right) \mathbf{a}_1 + \left(x_6 + \frac{1}{2}\right) \mathbf{a}_2 +$	$=$	$-a\left(z_6 - \frac{1}{2}\right) \hat{\mathbf{x}} + a\left(x_6 + \frac{1}{2}\right) \hat{\mathbf{y}} + ay_6 \hat{\mathbf{z}}$	(24d)	Al II
	$y_6 \mathbf{a}_3$				
$\mathbf{B}_{51} =$	$\left(z_6 + \frac{1}{2}\right) \mathbf{a}_1 + x_6 \mathbf{a}_2 - \left(y_6 - \frac{1}{2}\right) \mathbf{a}_3$	$=$	$a\left(z_6 + \frac{1}{2}\right) \hat{\mathbf{x}} + ax_6 \hat{\mathbf{y}} - a\left(y_6 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{52} =$	$z_6 \mathbf{a}_1 - \left(x_6 - \frac{1}{2}\right) \mathbf{a}_2 + \left(y_6 + \frac{1}{2}\right) \mathbf{a}_3$	$=$	$az_6 \hat{\mathbf{x}} - a\left(x_6 - \frac{1}{2}\right) \hat{\mathbf{y}} + a\left(y_6 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{53} =$	$-y_6 \mathbf{a}_1 - z_6 \mathbf{a}_2 - x_6 \mathbf{a}_3$	$=$	$-ay_6 \hat{\mathbf{x}} - az_6 \hat{\mathbf{y}} - ax_6 \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{54} =$	$y_6 \mathbf{a}_1 - \left(z_6 - \frac{1}{2}\right) \mathbf{a}_2 + \left(x_6 + \frac{1}{2}\right) \mathbf{a}_3$	$=$	$ay_6 \hat{\mathbf{x}} - a\left(z_6 - \frac{1}{2}\right) \hat{\mathbf{y}} + a\left(x_6 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	Al II

$\mathbf{B}_{55} =$	$-\left(y_6 - \frac{1}{2}\right) \mathbf{a}_1 + \left(z_6 + \frac{1}{2}\right) \mathbf{a}_2 +$	$=$	$-a\left(y_6 - \frac{1}{2}\right) \hat{\mathbf{x}} + a\left(z_6 + \frac{1}{2}\right) \hat{\mathbf{y}} + ax_6 \hat{\mathbf{z}}$	(24d)	Al II
	$x_6 \mathbf{a}_3$				
$\mathbf{B}_{56} =$	$\left(y_6 + \frac{1}{2}\right) \mathbf{a}_1 + z_6 \mathbf{a}_2 - \left(x_6 - \frac{1}{2}\right) \mathbf{a}_3$	$=$	$a\left(y_6 + \frac{1}{2}\right) \hat{\mathbf{x}} + az_6 \hat{\mathbf{y}} - a\left(x_6 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	Al II
$\mathbf{B}_{57} =$	$x_7 \mathbf{a}_1 + y_7 \mathbf{a}_2 + z_7 \mathbf{a}_3$	$=$	$ax_7 \hat{\mathbf{x}} + ay_7 \hat{\mathbf{y}} + az_7 \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{58} =$	$-\left(x_7 - \frac{1}{2}\right) \mathbf{a}_1 - y_7 \mathbf{a}_2 +$	$=$	$-a\left(x_7 - \frac{1}{2}\right) \hat{\mathbf{x}} - ay_7 \hat{\mathbf{y}} + a\left(z_7 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O III
	$\left(z_7 + \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{59} =$	$-x_7 \mathbf{a}_1 + \left(y_7 + \frac{1}{2}\right) \mathbf{a}_2 -$	$=$	$-ax_7 \hat{\mathbf{x}} + a\left(y_7 + \frac{1}{2}\right) \hat{\mathbf{y}} - a\left(z_7 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O III
	$\left(z_7 - \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{60} =$	$\left(x_7 + \frac{1}{2}\right) \mathbf{a}_1 - \left(y_7 - \frac{1}{2}\right) \mathbf{a}_2 - z_7 \mathbf{a}_3$	$=$	$a\left(x_7 + \frac{1}{2}\right) \hat{\mathbf{x}} - a\left(y_7 - \frac{1}{2}\right) \hat{\mathbf{y}} - az_7 \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{61} =$	$z_7 \mathbf{a}_1 + x_7 \mathbf{a}_2 + y_7 \mathbf{a}_3$	$=$	$az_7 \hat{\mathbf{x}} + ax_7 \hat{\mathbf{y}} + ay_7 \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{62} =$	$\left(z_7 + \frac{1}{2}\right) \mathbf{a}_1 - \left(x_7 - \frac{1}{2}\right) \mathbf{a}_2 - y_7 \mathbf{a}_3$	$=$	$a\left(z_7 + \frac{1}{2}\right) \hat{\mathbf{x}} - a\left(x_7 - \frac{1}{2}\right) \hat{\mathbf{y}} - ay_7 \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{63} =$	$-\left(z_7 - \frac{1}{2}\right) \mathbf{a}_1 - x_7 \mathbf{a}_2 +$	$=$	$-a\left(z_7 - \frac{1}{2}\right) \hat{\mathbf{x}} - ax_7 \hat{\mathbf{y}} + a\left(y_7 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O III
	$\left(y_7 + \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{64} =$	$-z_7 \mathbf{a}_1 + \left(x_7 + \frac{1}{2}\right) \mathbf{a}_2 -$	$=$	$-az_7 \hat{\mathbf{x}} + a\left(x_7 + \frac{1}{2}\right) \hat{\mathbf{y}} - a\left(y_7 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O III
	$\left(y_7 - \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{65} =$	$y_7 \mathbf{a}_1 + z_7 \mathbf{a}_2 + x_7 \mathbf{a}_3$	$=$	$ay_7 \hat{\mathbf{x}} + az_7 \hat{\mathbf{y}} + ax_7 \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{66} =$	$-y_7 \mathbf{a}_1 + \left(z_7 + \frac{1}{2}\right) \mathbf{a}_2 -$	$=$	$-ay_7 \hat{\mathbf{x}} + a\left(z_7 + \frac{1}{2}\right) \hat{\mathbf{y}} - a\left(x_7 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O III
	$\left(x_7 - \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{67} =$	$\left(y_7 + \frac{1}{2}\right) \mathbf{a}_1 - \left(z_7 - \frac{1}{2}\right) \mathbf{a}_2 - x_7 \mathbf{a}_3$	$=$	$a\left(y_7 + \frac{1}{2}\right) \hat{\mathbf{x}} - a\left(z_7 - \frac{1}{2}\right) \hat{\mathbf{y}} - ax_7 \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{68} =$	$-\left(y_7 - \frac{1}{2}\right) \mathbf{a}_1 - z_7 \mathbf{a}_2 +$	$=$	$-a\left(y_7 - \frac{1}{2}\right) \hat{\mathbf{x}} - az_7 \hat{\mathbf{y}} + a\left(x_7 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O III
	$\left(x_7 + \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{69} =$	$-x_7 \mathbf{a}_1 - y_7 \mathbf{a}_2 - z_7 \mathbf{a}_3$	$=$	$-ax_7 \hat{\mathbf{x}} - ay_7 \hat{\mathbf{y}} - az_7 \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{70} =$	$\left(x_7 + \frac{1}{2}\right) \mathbf{a}_1 + y_7 \mathbf{a}_2 - \left(z_7 - \frac{1}{2}\right) \mathbf{a}_3$	$=$	$a\left(x_7 + \frac{1}{2}\right) \hat{\mathbf{x}} + ay_7 \hat{\mathbf{y}} - a\left(z_7 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{71} =$	$x_7 \mathbf{a}_1 - \left(y_7 - \frac{1}{2}\right) \mathbf{a}_2 + \left(z_7 + \frac{1}{2}\right) \mathbf{a}_3$	$=$	$ax_7 \hat{\mathbf{x}} - a\left(y_7 - \frac{1}{2}\right) \hat{\mathbf{y}} + a\left(z_7 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{72} =$	$-\left(x_7 - \frac{1}{2}\right) \mathbf{a}_1 + \left(y_7 + \frac{1}{2}\right) \mathbf{a}_2 +$	$=$	$-a\left(x_7 - \frac{1}{2}\right) \hat{\mathbf{x}} + a\left(y_7 + \frac{1}{2}\right) \hat{\mathbf{y}} + az_7 \hat{\mathbf{z}}$	(24d)	O III
	$z_7 \mathbf{a}_3$				
$\mathbf{B}_{73} =$	$-z_7 \mathbf{a}_1 - x_7 \mathbf{a}_2 - y_7 \mathbf{a}_3$	$=$	$-az_7 \hat{\mathbf{x}} - ax_7 \hat{\mathbf{y}} - ay_7 \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{74} =$	$-\left(z_7 - \frac{1}{2}\right) \mathbf{a}_1 + \left(x_7 + \frac{1}{2}\right) \mathbf{a}_2 +$	$=$	$-a\left(z_7 - \frac{1}{2}\right) \hat{\mathbf{x}} + a\left(x_7 + \frac{1}{2}\right) \hat{\mathbf{y}} + ay_7 \hat{\mathbf{z}}$	(24d)	O III
	$y_7 \mathbf{a}_3$				
$\mathbf{B}_{75} =$	$\left(z_7 + \frac{1}{2}\right) \mathbf{a}_1 + x_7 \mathbf{a}_2 - \left(y_7 - \frac{1}{2}\right) \mathbf{a}_3$	$=$	$a\left(z_7 + \frac{1}{2}\right) \hat{\mathbf{x}} + ax_7 \hat{\mathbf{y}} - a\left(y_7 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{76} =$	$z_7 \mathbf{a}_1 - \left(x_7 - \frac{1}{2}\right) \mathbf{a}_2 + \left(y_7 + \frac{1}{2}\right) \mathbf{a}_3$	$=$	$az_7 \hat{\mathbf{x}} - a\left(x_7 - \frac{1}{2}\right) \hat{\mathbf{y}} + a\left(y_7 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{77} =$	$-y_7 \mathbf{a}_1 - z_7 \mathbf{a}_2 - x_7 \mathbf{a}_3$	$=$	$-ay_7 \hat{\mathbf{x}} - az_7 \hat{\mathbf{y}} - ax_7 \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{78} =$	$y_7 \mathbf{a}_1 - \left(z_7 - \frac{1}{2}\right) \mathbf{a}_2 + \left(x_7 + \frac{1}{2}\right) \mathbf{a}_3$	$=$	$ay_7 \hat{\mathbf{x}} - a\left(z_7 - \frac{1}{2}\right) \hat{\mathbf{y}} + a\left(x_7 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{79} =$	$-\left(y_7 - \frac{1}{2}\right) \mathbf{a}_1 + \left(z_7 + \frac{1}{2}\right) \mathbf{a}_2 +$	$=$	$-a\left(y_7 - \frac{1}{2}\right) \hat{\mathbf{x}} + a\left(z_7 + \frac{1}{2}\right) \hat{\mathbf{y}} + ax_7 \hat{\mathbf{z}}$	(24d)	O III
	$x_7 \mathbf{a}_3$				
$\mathbf{B}_{80} =$	$\left(y_7 + \frac{1}{2}\right) \mathbf{a}_1 + z_7 \mathbf{a}_2 - \left(x_7 - \frac{1}{2}\right) \mathbf{a}_3$	$=$	$a\left(y_7 + \frac{1}{2}\right) \hat{\mathbf{x}} + az_7 \hat{\mathbf{y}} - a\left(x_7 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O III
$\mathbf{B}_{81} =$	$x_8 \mathbf{a}_1 + y_8 \mathbf{a}_2 + z_8 \mathbf{a}_3$	$=$	$ax_8 \hat{\mathbf{x}} + ay_8 \hat{\mathbf{y}} + az_8 \hat{\mathbf{z}}$	(24d)	O IV
$\mathbf{B}_{82} =$	$-\left(x_8 - \frac{1}{2}\right) \mathbf{a}_1 - y_8 \mathbf{a}_2 +$	$=$	$-a\left(x_8 - \frac{1}{2}\right) \hat{\mathbf{x}} - ay_8 \hat{\mathbf{y}} + a\left(z_8 + \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O IV
	$\left(z_8 + \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{83} =$	$-x_8 \mathbf{a}_1 + \left(y_8 + \frac{1}{2}\right) \mathbf{a}_2 -$	$=$	$-ax_8 \hat{\mathbf{x}} + a\left(y_8 + \frac{1}{2}\right) \hat{\mathbf{y}} - a\left(z_8 - \frac{1}{2}\right) \hat{\mathbf{z}}$	(24d)	O IV
	$\left(z_8 - \frac{1}{2}\right) \mathbf{a}_3$				
$\mathbf{B}_{84} =$	$\left(x_8 + \frac{1}{2}\right) \mathbf{a}_1 - \left(y_8 - \frac{1}{2}\right) \mathbf{a}_2 - z_8 \mathbf{a}_3$	$=$	$a\left(x_8 + \frac{1}{2}\right) \hat{\mathbf{x}} - a\left(y_8 - \frac{1}{2}\right) \hat{\mathbf{y}} - az_8 \hat{\mathbf{z}}$	(24d)	O IV
$\mathbf{B}_{85} =$	$z_8 \mathbf{a}_1 + x_8 \mathbf{a}_2 + y_8 \mathbf{a}_3$	$=$	$az_8 \hat{\mathbf{x}} + ax_8 \hat{\mathbf{y}} + ay_8 \hat{\mathbf{z}}$	(24d)	O IV
$\mathbf{B}_{86} =$	$\left(z_8 + \frac{1}{2}\right) \mathbf{a}_1 - \left(x_8 - \frac{1}{2}\right) \mathbf{a}_2 - y_8 \mathbf{a}_3$	$=$	$a\left(z_8 + \frac{1}{2}\right) \hat{\mathbf{x}} - a\left(x_8 - \frac{1}{2}\right) \hat{\mathbf{y}} - ay_8 \hat{\mathbf{z}}$	(24d)	O IV

$\mathbf{B}_{118} =$	$(x_9 + \frac{1}{2}) \mathbf{a}_1 + y_9 \mathbf{a}_2 - (z_9 - \frac{1}{2}) \mathbf{a}_3$	$=$	$a(x_9 + \frac{1}{2}) \hat{\mathbf{x}} + ay_9 \hat{\mathbf{y}} - a(z_9 - \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	O V
$\mathbf{B}_{119} =$	$x_9 \mathbf{a}_1 - (y_9 - \frac{1}{2}) \mathbf{a}_2 + (z_9 + \frac{1}{2}) \mathbf{a}_3$	$=$	$ax_9 \hat{\mathbf{x}} - a(y_9 - \frac{1}{2}) \hat{\mathbf{y}} + a(z_9 + \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	O V
$\mathbf{B}_{120} =$	$-(x_9 - \frac{1}{2}) \mathbf{a}_1 + (y_9 + \frac{1}{2}) \mathbf{a}_2 + z_9 \mathbf{a}_3$	$=$	$-a(x_9 - \frac{1}{2}) \hat{\mathbf{x}} + a(y_9 + \frac{1}{2}) \hat{\mathbf{y}} + az_9 \hat{\mathbf{z}}$	(24d)	O V
$\mathbf{B}_{121} =$	$-z_9 \mathbf{a}_1 - x_9 \mathbf{a}_2 - y_9 \mathbf{a}_3$	$=$	$-az_9 \hat{\mathbf{x}} - ax_9 \hat{\mathbf{y}} - ay_9 \hat{\mathbf{z}}$	(24d)	O V
$\mathbf{B}_{122} =$	$-(z_9 - \frac{1}{2}) \mathbf{a}_1 + (x_9 + \frac{1}{2}) \mathbf{a}_2 + y_9 \mathbf{a}_3$	$=$	$-a(z_9 - \frac{1}{2}) \hat{\mathbf{x}} + a(x_9 + \frac{1}{2}) \hat{\mathbf{y}} + ay_9 \hat{\mathbf{z}}$	(24d)	O V
$\mathbf{B}_{123} =$	$(z_9 + \frac{1}{2}) \mathbf{a}_1 + x_9 \mathbf{a}_2 - (y_9 - \frac{1}{2}) \mathbf{a}_3$	$=$	$a(z_9 + \frac{1}{2}) \hat{\mathbf{x}} + ax_9 \hat{\mathbf{y}} - a(y_9 - \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	O V
$\mathbf{B}_{124} =$	$z_9 \mathbf{a}_1 - (x_9 - \frac{1}{2}) \mathbf{a}_2 + (y_9 + \frac{1}{2}) \mathbf{a}_3$	$=$	$az_9 \hat{\mathbf{x}} - a(x_9 - \frac{1}{2}) \hat{\mathbf{y}} + a(y_9 + \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	O V
$\mathbf{B}_{125} =$	$-y_9 \mathbf{a}_1 - z_9 \mathbf{a}_2 - x_9 \mathbf{a}_3$	$=$	$-ay_9 \hat{\mathbf{x}} - az_9 \hat{\mathbf{y}} - ax_9 \hat{\mathbf{z}}$	(24d)	O V
$\mathbf{B}_{126} =$	$y_9 \mathbf{a}_1 - (z_9 - \frac{1}{2}) \mathbf{a}_2 + (x_9 + \frac{1}{2}) \mathbf{a}_3$	$=$	$ay_9 \hat{\mathbf{x}} - a(z_9 - \frac{1}{2}) \hat{\mathbf{y}} + a(x_9 + \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	O V
$\mathbf{B}_{127} =$	$-(y_9 - \frac{1}{2}) \mathbf{a}_1 + (z_9 + \frac{1}{2}) \mathbf{a}_2 + x_9 \mathbf{a}_3$	$=$	$-a(y_9 - \frac{1}{2}) \hat{\mathbf{x}} + a(z_9 + \frac{1}{2}) \hat{\mathbf{y}} + ax_9 \hat{\mathbf{z}}$	(24d)	O V
$\mathbf{B}_{128} =$	$(y_9 + \frac{1}{2}) \mathbf{a}_1 + z_9 \mathbf{a}_2 - (x_9 - \frac{1}{2}) \mathbf{a}_3$	$=$	$a(y_9 + \frac{1}{2}) \hat{\mathbf{x}} + az_9 \hat{\mathbf{y}} - a(x_9 - \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	O V
$\mathbf{B}_{129} =$	$x_{10} \mathbf{a}_1 + y_{10} \mathbf{a}_2 + z_{10} \mathbf{a}_3$	$=$	$ax_{10} \hat{\mathbf{x}} + ay_{10} \hat{\mathbf{y}} + az_{10} \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{130} =$	$-(x_{10} - \frac{1}{2}) \mathbf{a}_1 - y_{10} \mathbf{a}_2 + (z_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(x_{10} - \frac{1}{2}) \hat{\mathbf{x}} - ay_{10} \hat{\mathbf{y}} + a(z_{10} + \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{131} =$	$-x_{10} \mathbf{a}_1 + (y_{10} + \frac{1}{2}) \mathbf{a}_2 - (z_{10} - \frac{1}{2}) \mathbf{a}_3$	$=$	$-ax_{10} \hat{\mathbf{x}} + a(y_{10} + \frac{1}{2}) \hat{\mathbf{y}} - a(z_{10} - \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{132} =$	$(x_{10} + \frac{1}{2}) \mathbf{a}_1 - (y_{10} - \frac{1}{2}) \mathbf{a}_2 - z_{10} \mathbf{a}_3$	$=$	$a(x_{10} + \frac{1}{2}) \hat{\mathbf{x}} - a(y_{10} - \frac{1}{2}) \hat{\mathbf{y}} - az_{10} \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{133} =$	$z_{10} \mathbf{a}_1 + x_{10} \mathbf{a}_2 + y_{10} \mathbf{a}_3$	$=$	$az_{10} \hat{\mathbf{x}} + ax_{10} \hat{\mathbf{y}} + ay_{10} \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{134} =$	$(z_{10} + \frac{1}{2}) \mathbf{a}_1 - (x_{10} - \frac{1}{2}) \mathbf{a}_2 - y_{10} \mathbf{a}_3$	$=$	$a(z_{10} + \frac{1}{2}) \hat{\mathbf{x}} - a(x_{10} - \frac{1}{2}) \hat{\mathbf{y}} - ay_{10} \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{135} =$	$-(z_{10} - \frac{1}{2}) \mathbf{a}_1 - x_{10} \mathbf{a}_2 + (y_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(z_{10} - \frac{1}{2}) \hat{\mathbf{x}} - ax_{10} \hat{\mathbf{y}} + a(y_{10} + \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{136} =$	$-z_{10} \mathbf{a}_1 + (x_{10} + \frac{1}{2}) \mathbf{a}_2 - (y_{10} - \frac{1}{2}) \mathbf{a}_3$	$=$	$-az_{10} \hat{\mathbf{x}} + a(x_{10} + \frac{1}{2}) \hat{\mathbf{y}} - a(y_{10} - \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{137} =$	$y_{10} \mathbf{a}_1 + z_{10} \mathbf{a}_2 + x_{10} \mathbf{a}_3$	$=$	$ay_{10} \hat{\mathbf{x}} + az_{10} \hat{\mathbf{y}} + ax_{10} \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{138} =$	$-y_{10} \mathbf{a}_1 + (z_{10} + \frac{1}{2}) \mathbf{a}_2 - (x_{10} - \frac{1}{2}) \mathbf{a}_3$	$=$	$-ay_{10} \hat{\mathbf{x}} + a(z_{10} + \frac{1}{2}) \hat{\mathbf{y}} - a(x_{10} - \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{139} =$	$(y_{10} + \frac{1}{2}) \mathbf{a}_1 - (z_{10} - \frac{1}{2}) \mathbf{a}_2 - x_{10} \mathbf{a}_3$	$=$	$a(y_{10} + \frac{1}{2}) \hat{\mathbf{x}} - a(z_{10} - \frac{1}{2}) \hat{\mathbf{y}} - ax_{10} \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{140} =$	$-(y_{10} - \frac{1}{2}) \mathbf{a}_1 - z_{10} \mathbf{a}_2 + (x_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(y_{10} - \frac{1}{2}) \hat{\mathbf{x}} - az_{10} \hat{\mathbf{y}} + a(x_{10} + \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{141} =$	$-x_{10} \mathbf{a}_1 - y_{10} \mathbf{a}_2 - z_{10} \mathbf{a}_3$	$=$	$-ax_{10} \hat{\mathbf{x}} - ay_{10} \hat{\mathbf{y}} - az_{10} \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{142} =$	$(x_{10} + \frac{1}{2}) \mathbf{a}_1 + y_{10} \mathbf{a}_2 - (z_{10} - \frac{1}{2}) \mathbf{a}_3$	$=$	$a(x_{10} + \frac{1}{2}) \hat{\mathbf{x}} + ay_{10} \hat{\mathbf{y}} - a(z_{10} - \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{143} =$	$x_{10} \mathbf{a}_1 - (y_{10} - \frac{1}{2}) \mathbf{a}_2 + (z_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$ax_{10} \hat{\mathbf{x}} - a(y_{10} - \frac{1}{2}) \hat{\mathbf{y}} + a(z_{10} + \frac{1}{2}) \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{144} =$	$-(x_{10} - \frac{1}{2}) \mathbf{a}_1 + (y_{10} + \frac{1}{2}) \mathbf{a}_2 + z_{10} \mathbf{a}_3$	$=$	$-a(x_{10} - \frac{1}{2}) \hat{\mathbf{x}} + a(y_{10} + \frac{1}{2}) \hat{\mathbf{y}} + az_{10} \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{145} =$	$-z_{10} \mathbf{a}_1 - x_{10} \mathbf{a}_2 - y_{10} \mathbf{a}_3$	$=$	$-az_{10} \hat{\mathbf{x}} - ax_{10} \hat{\mathbf{y}} - ay_{10} \hat{\mathbf{z}}$	(24d)	Pb III
$\mathbf{B}_{146} =$	$-(z_{10} - \frac{1}{2}) \mathbf{a}_1 + (x_{10} + \frac{1}{2}) \mathbf{a}_2 + y_{10} \mathbf{a}_3$	$=$	$-a(z_{10} - \frac{1}{2}) \hat{\mathbf{x}} + a(x_{10} + \frac{1}{2}) \hat{\mathbf{y}} + ay_{10} \hat{\mathbf{z}}$	(24d)	Pb III

$$\begin{aligned}
\mathbf{B}_{147} &= \begin{pmatrix} (z_{10} + \frac{1}{2}) \mathbf{a}_1 + x_{10} \mathbf{a}_2 - \\ (y_{10} - \frac{1}{2}) \mathbf{a}_3 \end{pmatrix} = a \left(z_{10} + \frac{1}{2} \right) \hat{\mathbf{x}} + ax_{10} \hat{\mathbf{y}} - a \left(y_{10} - \frac{1}{2} \right) \hat{\mathbf{z}} & (24d) & \text{Pb III} \\
\mathbf{B}_{148} &= \begin{pmatrix} z_{10} \mathbf{a}_1 - (x_{10} - \frac{1}{2}) \mathbf{a}_2 + \\ (y_{10} + \frac{1}{2}) \mathbf{a}_3 \end{pmatrix} = az_{10} \hat{\mathbf{x}} - a \left(x_{10} - \frac{1}{2} \right) \hat{\mathbf{y}} + a \left(y_{10} + \frac{1}{2} \right) \hat{\mathbf{z}} & (24d) & \text{Pb III} \\
\mathbf{B}_{149} &= -y_{10} \mathbf{a}_1 - z_{10} \mathbf{a}_2 - x_{10} \mathbf{a}_3 = -ay_{10} \hat{\mathbf{x}} - az_{10} \hat{\mathbf{y}} - ax_{10} \hat{\mathbf{z}} & (24d) & \text{Pb III} \\
\mathbf{B}_{150} &= \begin{pmatrix} y_{10} \mathbf{a}_1 - (z_{10} - \frac{1}{2}) \mathbf{a}_2 + \\ (x_{10} + \frac{1}{2}) \mathbf{a}_3 \end{pmatrix} = ay_{10} \hat{\mathbf{x}} - a \left(z_{10} - \frac{1}{2} \right) \hat{\mathbf{y}} + a \left(x_{10} + \frac{1}{2} \right) \hat{\mathbf{z}} & (24d) & \text{Pb III} \\
\mathbf{B}_{151} &= \begin{pmatrix} - (y_{10} - \frac{1}{2}) \mathbf{a}_1 + (z_{10} + \frac{1}{2}) \mathbf{a}_2 + \\ x_{10} \mathbf{a}_3 \end{pmatrix} = -a \left(y_{10} - \frac{1}{2} \right) \hat{\mathbf{x}} + a \left(z_{10} + \frac{1}{2} \right) \hat{\mathbf{y}} + ax_{10} \hat{\mathbf{z}} & (24d) & \text{Pb III} \\
\mathbf{B}_{152} &= \begin{pmatrix} (y_{10} + \frac{1}{2}) \mathbf{a}_1 + z_{10} \mathbf{a}_2 - \\ (x_{10} - \frac{1}{2}) \mathbf{a}_3 \end{pmatrix} = a \left(y_{10} + \frac{1}{2} \right) \hat{\mathbf{x}} + az_{10} \hat{\mathbf{y}} - a \left(x_{10} - \frac{1}{2} \right) \hat{\mathbf{z}} & (24d) & \text{Pb III}
\end{aligned}$$

References

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