MoP_3SiO_{11} (Monoclinic Model) Structure: AB11C3D_mC128_15_f_ae10f_3f_f-001

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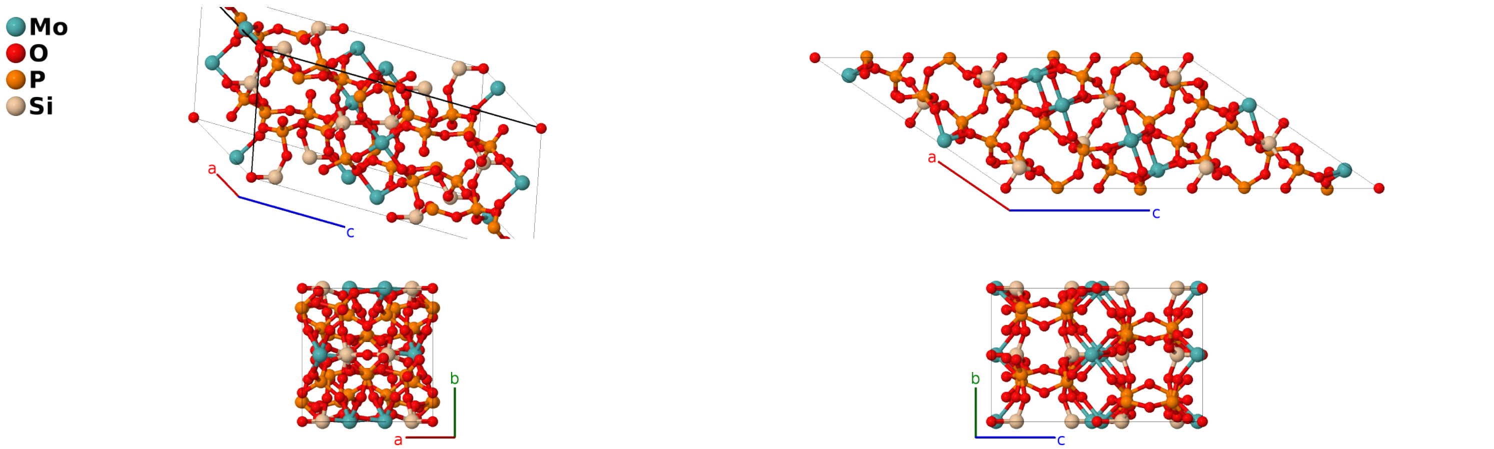
https://aflow.org/p/2HE4

https://aflow.org/p/AB11C3D_mC128_15_f_ae10f_3f_f-001

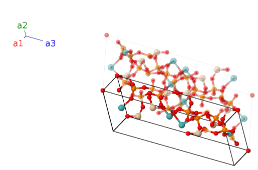


Prototype	$MoO_{11}P_3Si$
AFLOW prototype label	AB11C3D_mC128_15_f_ae10f_3f_f-001
ICSD	202450
Pearson symbol	mC128
Space group number	15
Space group symbol	$C2/c$
AFLOW prototype command	`aflow --proto=AB11C3D_mC128_15_f_ae10f_3f_f-001` `--params=`$a, b/a, c/a, \beta, y_2, x_3, y_3, z_3, x_4, y_4, z_4, x_5, y_5, z_5, x_6, y_6, z_6, x_7, y_7, z_7, x_8, y_8, z_8, x_9, y_9, z_9, x_{10}, y_{10}, z_{10}, x_{11}, y_{11}, z_{11}, x_{12}, y_{12}, z_{12}, x_{13}, y_{13}, z_{13}, x_{14}, y_{14}, z_{14}, x_{15}, y_{15}, z_{15}, x_{16}, y_{16}, z_{16}, x_{17}, y_{17}, z_{17}$

- (Leclaire, 1987) originally proposed that MoP_3SiO_{11} was in the monoclinic structure shown here. Later, (Badrtdinov, 2021) placed the compound in the rhombohedral $R\overline{3}c$ #167 space group. When we allow a 0.1Å uncertainty in the atomic positions the monoclinic structure reduces to the rhombohedral structure. Given this ambiguity we retain both structures in the library.

Base-centered Monoclinic primitive vectors

$$\mathbf{a_1} = \frac{1}{2}a\,\hat{\mathbf{x}} - \frac{1}{2}b\,\hat{\mathbf{y}}$$
$$\mathbf{a_2} = \frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{2}b\,\hat{\mathbf{y}}$$
$$\mathbf{a_3} = c\cos\beta\,\hat{\mathbf{x}} + c\sin\beta\,\hat{\mathbf{z}}$$



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	0	=	0	(4a)	O I
$\mathbf{B_2}$	=	$\frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}c\cos\beta\,\hat{\mathbf{x}} + \frac{1}{2}c\sin\beta\,\hat{\mathbf{z}}$	(4a)	O I
$\mathbf{B_3}$	=	$-y_2\,\mathbf{a}_1 + y_2\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}c\cos\beta\,\hat{\mathbf{x}} + by_2\,\hat{\mathbf{y}} + \frac{1}{4}c\sin\beta\,\hat{\mathbf{z}}$	(4e)	O II
$\mathbf{B_4}$	=	$y_2\,\mathbf{a}_1 - y_2\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}c\cos\beta\,\hat{\mathbf{x}} - by_2\,\hat{\mathbf{y}} + \frac{3}{4}c\sin\beta\,\hat{\mathbf{z}}$	(4e)	O II
$\mathbf{B_5}$	=	$(x_3 - y_3)\,\mathbf{a}_1 + (x_3 + y_3)\,\mathbf{a}_2 + z_3\,\mathbf{a}_3$	=	$(ax_3 + cz_3\cos\beta)\,\hat{\mathbf{x}} + by_3\,\hat{\mathbf{y}} + cz_3\sin\beta\,\hat{\mathbf{z}}$	(8f)	Mo I
$\mathbf{B_6}$	=	$-(x_3 + y_3)\,\mathbf{a}_1 - (x_3 - y_3)\,\mathbf{a}_2 - \left(z_3 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\left(ax_3 + c\left(z_3 - \frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}} + by_3\,\hat{\mathbf{y}} - c\left(z_3 - \frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	Mo I
$\mathbf{B_7}$	=	$-(x_3 - y_3)\,\mathbf{a}_1 - (x_3 + y_3)\,\mathbf{a}_2 - z_3\,\mathbf{a}_3$	=	$-(ax_3 + cz_3\cos\beta)\,\hat{\mathbf{x}} - by_3\,\hat{\mathbf{y}} - cz_3\sin\beta\,\hat{\mathbf{z}}$	(8f)	Mo I
$\mathbf{B_8}$	=	$(x_3 + y_3)\,\mathbf{a}_1 + (x_3 - y_3)\,\mathbf{a}_2 + \left(z_3 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$\left(ax_3 + c\left(z_3 + \frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}} - by_3\,\hat{\mathbf{y}} + c\left(z_3 + \frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	Mo I
$\mathbf{B_9}$	=	$(x_4 - y_4)\,\mathbf{a}_1 + (x_4 + y_4)\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$(ax_4 + cz_4\cos\beta)\,\hat{\mathbf{x}} + by_4\,\hat{\mathbf{y}} + cz_4\sin\beta\,\hat{\mathbf{z}}$	(8f)	O III
$\mathbf{B_{10}}$	=	$-(x_4 + y_4)\,\mathbf{a}_1 - (x_4 - y_4)\,\mathbf{a}_2 - \left(z_4 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\left(ax_4 + c\left(z_4 - \frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}} + by_4\,\hat{\mathbf{y}} - c\left(z_4 - \frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	O III
$\mathbf{B_{11}}$	=	$-(x_4 - y_4)\,\mathbf{a}_1 - (x_4 + y_4)\,\mathbf{a}_2 - z_4\,\mathbf{a}_3$	=	$-(ax_4 + cz_4\cos\beta)\,\hat{\mathbf{x}} - by_4\,\hat{\mathbf{y}} - cz_4\sin\beta\,\hat{\mathbf{z}}$	(8f)	O III
$\mathbf{B_{12}}$	=	$(x_4 + y_4)\,\mathbf{a}_1 + (x_4 - y_4)\,\mathbf{a}_2 + \left(z_4 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$\left(ax_4 + c\left(z_4 + \frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}} - by_4\,\hat{\mathbf{y}} + c\left(z_4 + \frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	O III
$\mathbf{B_{13}}$	=	$(x_5 - y_5)\,\mathbf{a}_1 + (x_5 + y_5)\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$(ax_5 + cz_5\cos\beta)\,\hat{\mathbf{x}} + by_5\,\hat{\mathbf{y}} + cz_5\sin\beta\,\hat{\mathbf{z}}$	(8f)	O IV
$\mathbf{B_{14}}$	=	$-(x_5 + y_5)\,\mathbf{a}_1 - (x_5 - y_5)\,\mathbf{a}_2 - \left(z_5 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\left(ax_5 + c\left(z_5 - \frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}} + by_5\,\hat{\mathbf{y}} - c\left(z_5 - \frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	O IV
$\mathbf{B_{15}}$	=	$-(x_5 - y_5)\,\mathbf{a}_1 - (x_5 + y_5)\,\mathbf{a}_2 - z_5\,\mathbf{a}_3$	=	$-(ax_5 + cz_5\cos\beta)\,\hat{\mathbf{x}} - by_5\,\hat{\mathbf{y}} - cz_5\sin\beta\,\hat{\mathbf{z}}$	(8f)	O IV
$\mathbf{B_{16}}$	=	$(x_5 + y_5)\,\mathbf{a}_1 + (x_5 - y_5)\,\mathbf{a}_2 + \left(z_5 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$\left(ax_5 + c\left(z_5 + \frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}} - by_5\,\hat{\mathbf{y}} + c\left(z_5 + \frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	O IV
$\mathbf{B_{17}}$	=	$(x_6 - y_6)\,\mathbf{a}_1 + (x_6 + y_6)\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$(ax_6 + cz_6\cos\beta)\,\hat{\mathbf{x}} + by_6\,\hat{\mathbf{y}} + cz_6\sin\beta\,\hat{\mathbf{z}}$	(8f)	O V
$\mathbf{B_{18}}$	=	$-(x_6 + y_6)\,\mathbf{a}_1 - (x_6 - y_6)\,\mathbf{a}_2 - \left(z_6 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\left(ax_6 + c\left(z_6 - \frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}} + by_6\,\hat{\mathbf{y}} - c\left(z_6 - \frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	O V
$\mathbf{B_{19}}$	=	$-(x_6 - y_6)\,\mathbf{a}_1 - (x_6 + y_6)\,\mathbf{a}_2 - z_6\,\mathbf{a}_3$	=	$-(ax_6 + cz_6\cos\beta)\,\hat{\mathbf{x}} - by_6\,\hat{\mathbf{y}} - cz_6\sin\beta\,\hat{\mathbf{z}}$	(8f)	O V
$\mathbf{B_{20}}$	=	$(x_6 + y_6)\,\mathbf{a}_1 + (x_6 - y_6)\,\mathbf{a}_2 + \left(z_6 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$\left(ax_6 + c\left(z_6 + \frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}} - by_6\,\hat{\mathbf{y}} + c\left(z_6 + \frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	O V
$\mathbf{B_{21}}$	=	$(x_7 - y_7)\,\mathbf{a}_1 + (x_7 + y_7)\,\mathbf{a}_2 + z_7\,\mathbf{a}_3$	=	$(ax_7 + cz_7\cos\beta)\,\hat{\mathbf{x}} + by_7\,\hat{\mathbf{y}} + cz_7\sin\beta\,\hat{\mathbf{z}}$	(8f)	O VI
$\mathbf{B_{22}}$	=	$-(x_7 + y_7)\,\mathbf{a}_1 - (x_7 - y_7)\,\mathbf{a}_2 - \left(z_7 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\left(ax_7 + c\left(z_7 - \frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}} + by_7\,\hat{\mathbf{y}} - c\left(z_7 - \frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	O VI
$\mathbf{B_{23}}$	=	$-(x_7 - y_7)\,\mathbf{a}_1 - (x_7 + y_7)\,\mathbf{a}_2 - z_7\,\mathbf{a}_3$	=	$-(ax_7 + cz_7\cos\beta)\,\hat{\mathbf{x}} - by_7\,\hat{\mathbf{y}} - cz_7\sin\beta\,\hat{\mathbf{z}}$	(8f)	O VI
$\mathbf{B_{24}}$	=	$(x_7 + y_7)\,\mathbf{a}_1 + (x_7 - y_7)\,\mathbf{a}_2 + \left(z_7 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$\left(ax_7 + c\left(z_7 + \frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}} - by_7\,\hat{\mathbf{y}} + c\left(z_7 + \frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	O VI

$\mathbf{B_{25}}$	=	$\left(x_{8}-y_{8}\right)\,\mathbf{a}_{1}+\left(x_{8}+y_{8}\right)\,\mathbf{a}_{2}+z_{8}\,\mathbf{a}_{3}$	=	$\left(ax_{8}+cz_{8}\cos\beta\right)\,\mathbf{\hat{x}}+by_{8}\,\mathbf{\hat{y}}+cz_{8}\sin\beta\,\mathbf{\hat{z}}$	(8f)	O VII
$\mathbf{B_{26}}$	=	$-\left(x_{8}+y_{8}\right)\,\mathbf{a}_{1}-\left(x_{8}-y_{8}\right)\,\mathbf{a}_{2}-\left(z_{8}-\frac{1}{2}\right)\,\mathbf{a}_{3}$	=	$-\left(ax_{8}+c\left(z_{8}-\frac{1}{2}\right)\cos\beta\right)\,\mathbf{\hat{x}}+by_{8}\,\mathbf{\hat{y}}-c\left(z_{8}-\frac{1}{2}\right)\sin\beta\,\mathbf{\hat{z}}$	(8f)	O VII
$\mathbf{B_{27}}$	=	$-\left(x_{8}-y_{8}\right)\,\mathbf{a}_{1}-\left(x_{8}+y_{8}\right)\,\mathbf{a}_{2}-z_{8}\,\mathbf{a}_{3}$	=	$-\left(ax_{8}+cz_{8}\cos\beta\right)\,\mathbf{\hat{x}}-by_{8}\,\mathbf{\hat{y}}-cz_{8}\sin\beta\,\mathbf{\hat{z}}$	(8f)	O VII
$\mathbf{B_{28}}$	=	$\left(x_{8}+y_{8}\right)\,\mathbf{a}_{1}+\left(x_{8}-y_{8}\right)\,\mathbf{a}_{2}+\left(z_{8}+\frac{1}{2}\right)\,\mathbf{a}_{3}$	=	$\left(ax_{8}+c\left(z_{8}+\frac{1}{2}\right)\cos\beta\right)\,\mathbf{\hat{x}}-by_{8}\,\mathbf{\hat{y}}+c\left(z_{8}+\frac{1}{2}\right)\sin\beta\,\mathbf{\hat{z}}$	(8f)	O VII
$\mathbf{B_{29}}$	=	$\left(x_{9}-y_{9}\right)\,\mathbf{a}_{1}+\left(x_{9}+y_{9}\right)\,\mathbf{a}_{2}+z_{9}\,\mathbf{a}_{3}$	=	$\left(ax_{9}+cz_{9}\cos\beta\right)\,\mathbf{\hat{x}}+by_{9}\,\mathbf{\hat{y}}+cz_{9}\sin\beta\,\mathbf{\hat{z}}$	(8f)	O VIII
$\mathbf{B_{30}}$	=	$-\left(x_{9}+y_{9}\right)\,\mathbf{a}_{1}-\left(x_{9}-y_{9}\right)\,\mathbf{a}_{2}-\left(z_{9}-\frac{1}{2}\right)\,\mathbf{a}_{3}$	=	$-\left(ax_{9}+c\left(z_{9}-\frac{1}{2}\right)\cos\beta\right)\,\mathbf{\hat{x}}+by_{9}\,\mathbf{\hat{y}}-c\left(z_{9}-\frac{1}{2}\right)\sin\beta\,\mathbf{\hat{z}}$	(8f)	O VIII
$\mathbf{B_{31}}$	=	$-\left(x_{9}-y_{9}\right)\,\mathbf{a}_{1}-\left(x_{9}+y_{9}\right)\,\mathbf{a}_{2}-z_{9}\,\mathbf{a}_{3}$	=	$-\left(ax_{9}+cz_{9}\cos\beta\right)\,\mathbf{\hat{x}}-by_{9}\,\mathbf{\hat{y}}-cz_{9}\sin\beta\,\mathbf{\hat{z}}$	(8f)	O VIII
$\mathbf{B_{32}}$	=	$\left(x_{9}+y_{9}\right)\,\mathbf{a}_{1}+\left(x_{9}-y_{9}\right)\,\mathbf{a}_{2}+\left(z_{9}+\frac{1}{2}\right)\,\mathbf{a}_{3}$	=	$\left(ax_{9}+c\left(z_{9}+\frac{1}{2}\right)\cos\beta\right)\,\mathbf{\hat{x}}-by_{9}\,\mathbf{\hat{y}}+c\left(z_{9}+\frac{1}{2}\right)\sin\beta\,\mathbf{\hat{z}}$	(8f)	O VIII
$\mathbf{B_{33}}$	=	$\left(x_{10}-y_{10}\right)\,\mathbf{a}_{1}+\left(x_{10}+y_{10}\right)\,\mathbf{a}_{2}+z_{10}\,\mathbf{a}_{3}$	=	$\left(ax_{10}+cz_{10}\cos\beta\right)\,\mathbf{\hat{x}}+by_{10}\,\mathbf{\hat{y}}+cz_{10}\sin\beta\,\mathbf{\hat{z}}$	(8f)	O IX
$\mathbf{B_{34}}$	=	$-\left(x_{10}+y_{10}\right)\,\mathbf{a}_{1}-\left(x_{10}-y_{10}\right)\,\mathbf{a}_{2}-\left(z_{10}-\frac{1}{2}\right)\,\mathbf{a}_{3}$	=	$-\left(ax_{10}+c\left(z_{10}-\frac{1}{2}\right)\cos\beta\right)\,\mathbf{\hat{x}}+by_{10}\,\mathbf{\hat{y}}-c\left(z_{10}-\frac{1}{2}\right)\sin\beta\,\mathbf{\hat{z}}$	(8f)	O IX
$\mathbf{B_{35}}$	=	$-\left(x_{10}-y_{10}\right)\,\mathbf{a}_{1}-\left(x_{10}+y_{10}\right)\,\mathbf{a}_{2}-z_{10}\,\mathbf{a}_{3}$	=	$-\left(ax_{10}+cz_{10}\cos\beta\right)\,\mathbf{\hat{x}}-by_{10}\,\mathbf{\hat{y}}-cz_{10}\sin\beta\,\mathbf{\hat{z}}$	(8f)	O IX
$\mathbf{B_{36}}$	=	$\left(x_{10}+y_{10}\right)\,\mathbf{a}_{1}+\left(x_{10}-y_{10}\right)\,\mathbf{a}_{2}+\left(z_{10}+\frac{1}{2}\right)\,\mathbf{a}_{3}$	=	$\left(ax_{10}+c\left(z_{10}+\frac{1}{2}\right)\cos\beta\right)\,\mathbf{\hat{x}}-by_{10}\,\mathbf{\hat{y}}+c\left(z_{10}+\frac{1}{2}\right)\sin\beta\,\mathbf{\hat{z}}$	(8f)	O IX
$\mathbf{B_{37}}$	=	$\left(x_{11}-y_{11}\right)\,\mathbf{a}_{1}+\left(x_{11}+y_{11}\right)\,\mathbf{a}_{2}+z_{11}\,\mathbf{a}_{3}$	=	$\left(ax_{11}+cz_{11}\cos\beta\right)\,\mathbf{\hat{x}}+by_{11}\,\mathbf{\hat{y}}+cz_{11}\sin\beta\,\mathbf{\hat{z}}$	(8f)	O X
$\mathbf{B_{38}}$	=	$-\left(x_{11}+y_{11}\right)\,\mathbf{a}_{1}-\left(x_{11}-y_{11}\right)\,\mathbf{a}_{2}-\left(z_{11}-\frac{1}{2}\right)\,\mathbf{a}_{3}$	=	$-\left(ax_{11}+c\left(z_{11}-\frac{1}{2}\right)\cos\beta\right)\,\mathbf{\hat{x}}+by_{11}\,\mathbf{\hat{y}}-c\left(z_{11}-\frac{1}{2}\right)\sin\beta\,\mathbf{\hat{z}}$	(8f)	O X
$\mathbf{B_{39}}$	=	$-\left(x_{11}-y_{11}\right)\,\mathbf{a}_{1}-\left(x_{11}+y_{11}\right)\,\mathbf{a}_{2}-z_{11}\,\mathbf{a}_{3}$	=	$-\left(ax_{11}+cz_{11}\cos\beta\right)\,\mathbf{\hat{x}}-by_{11}\,\mathbf{\hat{y}}-cz_{11}\sin\beta\,\mathbf{\hat{z}}$	(8f)	O X
$\mathbf{B_{40}}$	=	$\left(x_{11}+y_{11}\right)\,\mathbf{a}_{1}+\left(x_{11}-y_{11}\right)\,\mathbf{a}_{2}+\left(z_{11}+\frac{1}{2}\right)\,\mathbf{a}_{3}$	=	$\left(ax_{11}+c\left(z_{11}+\frac{1}{2}\right)\cos\beta\right)\,\mathbf{\hat{x}}-by_{11}\,\mathbf{\hat{y}}+c\left(z_{11}+\frac{1}{2}\right)\sin\beta\,\mathbf{\hat{z}}$	(8f)	O X
$\mathbf{B_{41}}$	=	$\left(x_{12}-y_{12}\right)\,\mathbf{a}_{1}+\left(x_{12}+y_{12}\right)\,\mathbf{a}_{2}+z_{12}\,\mathbf{a}_{3}$	=	$\left(ax_{12}+cz_{12}\cos\beta\right)\,\mathbf{\hat{x}}+by_{12}\,\mathbf{\hat{y}}+cz_{12}\sin\beta\,\mathbf{\hat{z}}$	(8f)	O XI
$\mathbf{B_{42}}$	=	$-\left(x_{12}+y_{12}\right)\,\mathbf{a}_{1}-\left(x_{12}-y_{12}\right)\,\mathbf{a}_{2}-\left(z_{12}-\frac{1}{2}\right)\,\mathbf{a}_{3}$	=	$-\left(ax_{12}+c\left(z_{12}-\frac{1}{2}\right)\cos\beta\right)\,\mathbf{\hat{x}}+by_{12}\,\mathbf{\hat{y}}-c\left(z_{12}-\frac{1}{2}\right)\sin\beta\,\mathbf{\hat{z}}$	(8f)	O XI
$\mathbf{B_{43}}$	=	$-\left(x_{12}-y_{12}\right)\,\mathbf{a}_{1}-\left(x_{12}+y_{12}\right)\,\mathbf{a}_{2}-z_{12}\,\mathbf{a}_{3}$	=	$-\left(ax_{12}+cz_{12}\cos\beta\right)\,\mathbf{\hat{x}}-by_{12}\,\mathbf{\hat{y}}-cz_{12}\sin\beta\,\mathbf{\hat{z}}$	(8f)	O XI
$\mathbf{B_{44}}$	=	$\left(x_{12}+y_{12}\right)\,\mathbf{a}_{1}+\left(x_{12}-y_{12}\right)\,\mathbf{a}_{2}+\left(z_{12}+\frac{1}{2}\right)\,\mathbf{a}_{3}$	=	$\left(ax_{12}+c\left(z_{12}+\frac{1}{2}\right)\cos\beta\right)\,\mathbf{\hat{x}}-by_{12}\,\mathbf{\hat{y}}+c\left(z_{12}+\frac{1}{2}\right)\sin\beta\,\mathbf{\hat{z}}$	(8f)	O XI
$\mathbf{B_{45}}$	=	$\left(x_{13}-y_{13}\right)\,\mathbf{a}_{1}+\left(x_{13}+y_{13}\right)\,\mathbf{a}_{2}+z_{13}\,\mathbf{a}_{3}$	=	$\left(ax_{13}+cz_{13}\cos\beta\right)\,\mathbf{\hat{x}}+by_{13}\,\mathbf{\hat{y}}+cz_{13}\sin\beta\,\mathbf{\hat{z}}$	(8f)	O XII
$\mathbf{B_{46}}$	=	$-\left(x_{13}+y_{13}\right)\,\mathbf{a}_{1}-\left(x_{13}-y_{13}\right)\,\mathbf{a}_{2}-\left(z_{13}-\frac{1}{2}\right)\,\mathbf{a}_{3}$	=	$-\left(ax_{13}+c\left(z_{13}-\frac{1}{2}\right)\cos\beta\right)\,\mathbf{\hat{x}}+by_{13}\,\mathbf{\hat{y}}-c\left(z_{13}-\frac{1}{2}\right)\sin\beta\,\mathbf{\hat{z}}$	(8f)	O XII
$\mathbf{B_{47}}$	=	$-\left(x_{13}-y_{13}\right)\,\mathbf{a}_{1}-\left(x_{13}+y_{13}\right)\,\mathbf{a}_{2}-z_{13}\,\mathbf{a}_{3}$	=	$-\left(ax_{13}+cz_{13}\cos\beta\right)\,\mathbf{\hat{x}}-by_{13}\,\mathbf{\hat{y}}-cz_{13}\sin\beta\,\mathbf{\hat{z}}$	(8f)	O XII

$\mathbf{B_{48}}$	=	$\left(x_{13}+y_{13}\right)\,\mathbf{a}_1+\left(x_{13}-y_{13}\right)\,\mathbf{a}_2+\left(z_{13}+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\left(ax_{13}+c\left(z_{13}+\frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}}-by_{13}\,\hat{\mathbf{y}}+c\left(z_{13}+\frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	O XII
$\mathbf{B_{49}}$	=	$\left(x_{14}-y_{14}\right)\,\mathbf{a}_1+\left(x_{14}+y_{14}\right)\,\mathbf{a}_2+z_{14}\,\mathbf{a}_3$	=	$\left(ax_{14}+cz_{14}\cos\beta\right)\,\hat{\mathbf{x}}+by_{14}\,\hat{\mathbf{y}}+cz_{14}\sin\beta\,\hat{\mathbf{z}}$	(8f)	P I
$\mathbf{B_{50}}$	=	$-\left(x_{14}+y_{14}\right)\,\mathbf{a}_1-\left(x_{14}-y_{14}\right)\,\mathbf{a}_2-\left(z_{14}-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\left(ax_{14}+c\left(z_{14}-\frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}}+by_{14}\,\hat{\mathbf{y}}-c\left(z_{14}-\frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	P I
$\mathbf{B_{51}}$	=	$-\left(x_{14}-y_{14}\right)\,\mathbf{a}_1-\left(x_{14}+y_{14}\right)\,\mathbf{a}_2-z_{14}\,\mathbf{a}_3$	=	$-\left(ax_{14}+cz_{14}\cos\beta\right)\,\hat{\mathbf{x}}-by_{14}\,\hat{\mathbf{y}}-cz_{14}\sin\beta\,\hat{\mathbf{z}}$	(8f)	P I
$\mathbf{B_{52}}$	=	$\left(x_{14}+y_{14}\right)\,\mathbf{a}_1+\left(x_{14}-y_{14}\right)\,\mathbf{a}_2+\left(z_{14}+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\left(ax_{14}+c\left(z_{14}+\frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}}-by_{14}\,\hat{\mathbf{y}}+c\left(z_{14}+\frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	P I
$\mathbf{B_{53}}$	=	$\left(x_{15}-y_{15}\right)\,\mathbf{a}_1+\left(x_{15}+y_{15}\right)\,\mathbf{a}_2+z_{15}\,\mathbf{a}_3$	=	$\left(ax_{15}+cz_{15}\cos\beta\right)\,\hat{\mathbf{x}}+by_{15}\,\hat{\mathbf{y}}+cz_{15}\sin\beta\,\hat{\mathbf{z}}$	(8f)	P II
$\mathbf{B_{54}}$	=	$-\left(x_{15}+y_{15}\right)\,\mathbf{a}_1-\left(x_{15}-y_{15}\right)\,\mathbf{a}_2-\left(z_{15}-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\left(ax_{15}+c\left(z_{15}-\frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}}+by_{15}\,\hat{\mathbf{y}}-c\left(z_{15}-\frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	P II
$\mathbf{B_{55}}$	=	$-\left(x_{15}-y_{15}\right)\,\mathbf{a}_1-\left(x_{15}+y_{15}\right)\,\mathbf{a}_2-z_{15}\,\mathbf{a}_3$	=	$-\left(ax_{15}+cz_{15}\cos\beta\right)\,\hat{\mathbf{x}}-by_{15}\,\hat{\mathbf{y}}-cz_{15}\sin\beta\,\hat{\mathbf{z}}$	(8f)	P II
$\mathbf{B_{56}}$	=	$\left(x_{15}+y_{15}\right)\,\mathbf{a}_1+\left(x_{15}-y_{15}\right)\,\mathbf{a}_2+\left(z_{15}+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\left(ax_{15}+c\left(z_{15}+\frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}}-by_{15}\,\hat{\mathbf{y}}+c\left(z_{15}+\frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	P II
$\mathbf{B_{57}}$	=	$\left(x_{16}-y_{16}\right)\,\mathbf{a}_1+\left(x_{16}+y_{16}\right)\,\mathbf{a}_2+z_{16}\,\mathbf{a}_3$	=	$\left(ax_{16}+cz_{16}\cos\beta\right)\,\hat{\mathbf{x}}+by_{16}\,\hat{\mathbf{y}}+cz_{16}\sin\beta\,\hat{\mathbf{z}}$	(8f)	P III
$\mathbf{B_{58}}$	=	$-\left(x_{16}+y_{16}\right)\,\mathbf{a}_1-\left(x_{16}-y_{16}\right)\,\mathbf{a}_2-\left(z_{16}-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\left(ax_{16}+c\left(z_{16}-\frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}}+by_{16}\,\hat{\mathbf{y}}-c\left(z_{16}-\frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	P III
$\mathbf{B_{59}}$	=	$-\left(x_{16}-y_{16}\right)\,\mathbf{a}_1-\left(x_{16}+y_{16}\right)\,\mathbf{a}_2-z_{16}\,\mathbf{a}_3$	=	$-\left(ax_{16}+cz_{16}\cos\beta\right)\,\hat{\mathbf{x}}-by_{16}\,\hat{\mathbf{y}}-cz_{16}\sin\beta\,\hat{\mathbf{z}}$	(8f)	P III
$\mathbf{B_{60}}$	=	$\left(x_{16}+y_{16}\right)\,\mathbf{a}_1+\left(x_{16}-y_{16}\right)\,\mathbf{a}_2+\left(z_{16}+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\left(ax_{16}+c\left(z_{16}+\frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}}-by_{16}\,\hat{\mathbf{y}}+c\left(z_{16}+\frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	P III
$\mathbf{B_{61}}$	=	$\left(x_{17}-y_{17}\right)\,\mathbf{a}_1+\left(x_{17}+y_{17}\right)\,\mathbf{a}_2+z_{17}\,\mathbf{a}_3$	=	$\left(ax_{17}+cz_{17}\cos\beta\right)\,\hat{\mathbf{x}}+by_{17}\,\hat{\mathbf{y}}+cz_{17}\sin\beta\,\hat{\mathbf{z}}$	(8f)	Si I
$\mathbf{B_{62}}$	=	$-\left(x_{17}+y_{17}\right)\,\mathbf{a}_1-\left(x_{17}-y_{17}\right)\,\mathbf{a}_2-\left(z_{17}-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\left(ax_{17}+c\left(z_{17}-\frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}}+by_{17}\,\hat{\mathbf{y}}-c\left(z_{17}-\frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	Si I
$\mathbf{B_{63}}$	=	$-\left(x_{17}-y_{17}\right)\,\mathbf{a}_1-\left(x_{17}+y_{17}\right)\,\mathbf{a}_2-z_{17}\,\mathbf{a}_3$	=	$-\left(ax_{17}+cz_{17}\cos\beta\right)\,\hat{\mathbf{x}}-by_{17}\,\hat{\mathbf{y}}-cz_{17}\sin\beta\,\hat{\mathbf{z}}$	(8f)	Si I
$\mathbf{B_{64}}$	=	$\left(x_{17}+y_{17}\right)\,\mathbf{a}_1+\left(x_{17}-y_{17}\right)\,\mathbf{a}_2+\left(z_{17}+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\left(ax_{17}+c\left(z_{17}+\frac{1}{2}\right)\cos\beta\right)\,\hat{\mathbf{x}}-by_{17}\,\hat{\mathbf{y}}+c\left(z_{17}+\frac{1}{2}\right)\sin\beta\,\hat{\mathbf{z}}$	(8f)	Si I

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