

# K<sub>2</sub>PdSe<sub>10</sub> Structure:

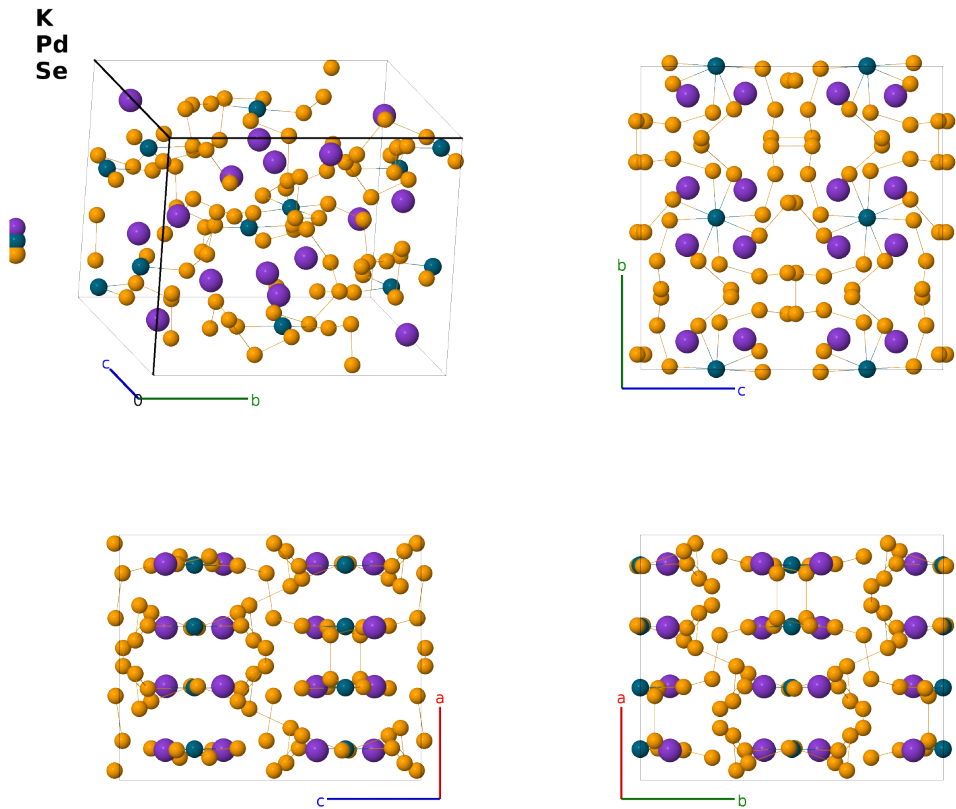
## A2BC10\_oI104\_24\_2d\_2a\_10d-001

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- D. Hicks, M. J. Mehl, M. Esters, C. Osos, 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/S3L7>

[https://aflow.org/prototype-encyclopedia/A2BC10\\_oI104\\_24\\_2d\\_2a\\_10d-001](https://aflow.org/prototype-encyclopedia/A2BC10_oI104_24_2d_2a_10d-001)

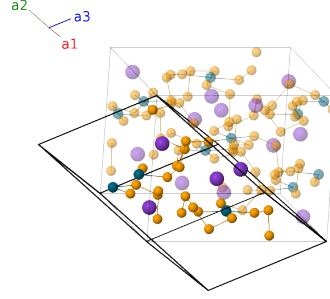


|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Prototype               | K <sub>2</sub> PdSe <sub>10</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| AFLOW prototype label   | A2BC10_oI104_24_2d_2a_10d-001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| ICSD                    | 71947                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CCDC                    | 1632825                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Pearson symbol          | oI104                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Space group number      | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Space group symbol      | $I2_12_12_1$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| AFLOW prototype command | <pre>aflow --proto=A2BC10_oI104_24_2d_2a_10d-001 --params=a,b/a,c/a,x<sub>1</sub>,x<sub>2</sub>,x<sub>3</sub>,y<sub>3</sub>,z<sub>3</sub>,x<sub>4</sub>,y<sub>4</sub>,z<sub>4</sub>,x<sub>5</sub>,y<sub>5</sub>,z<sub>5</sub>,x<sub>6</sub>,y<sub>6</sub>,z<sub>6</sub>,x<sub>7</sub>,y<sub>7</sub>,z<sub>7</sub>,x<sub>8</sub>,y<sub>8</sub>, z<sub>8</sub>,x<sub>9</sub>,y<sub>9</sub>,z<sub>9</sub>,x<sub>10</sub>,y<sub>10</sub>,z<sub>10</sub>,x<sub>11</sub>,y<sub>11</sub>,z<sub>11</sub>,x<sub>12</sub>,y<sub>12</sub>,z<sub>12</sub>,x<sub>13</sub>,y<sub>13</sub>,z<sub>13</sub>,x<sub>14</sub>,y<sub>14</sub>,z<sub>14</sub></pre> |

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## Body-centered Orthorhombic primitive vectors

$$\begin{aligned}\mathbf{a}_1 &= -\frac{1}{2}a\hat{\mathbf{x}} + \frac{1}{2}b\hat{\mathbf{y}} + \frac{1}{2}c\hat{\mathbf{z}} \\ \mathbf{a}_2 &= \frac{1}{2}a\hat{\mathbf{x}} - \frac{1}{2}b\hat{\mathbf{y}} + \frac{1}{2}c\hat{\mathbf{z}} \\ \mathbf{a}_3 &= \frac{1}{2}a\hat{\mathbf{x}} + \frac{1}{2}b\hat{\mathbf{y}} - \frac{1}{2}c\hat{\mathbf{z}}\end{aligned}$$




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## Basis vectors

|                   | Lattice<br>coordinates                                                                                       |     | Cartesian<br>coordinates                                                              | Wyckoff<br>position | Atom<br>type |
|-------------------|--------------------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------|---------------------|--------------|
| $\mathbf{B}_1$    | $= \frac{1}{4}\mathbf{a}_1 + (x_1 + \frac{1}{4})\mathbf{a}_2 + x_1\mathbf{a}_3$                              | $=$ | $ax_1\hat{\mathbf{x}} + \frac{1}{4}c\hat{\mathbf{z}}$                                 | (4a)                | Pd I         |
| $\mathbf{B}_2$    | $= \frac{3}{4}\mathbf{a}_1 - (x_1 - \frac{1}{4})\mathbf{a}_2 - (x_1 - \frac{1}{2})\mathbf{a}_3$              | $=$ | $-ax_1\hat{\mathbf{x}} + \frac{1}{2}b\hat{\mathbf{y}} + \frac{1}{4}c\hat{\mathbf{z}}$ | (4a)                | Pd I         |
| $\mathbf{B}_3$    | $= \frac{1}{4}\mathbf{a}_1 + (x_2 + \frac{1}{4})\mathbf{a}_2 + x_2\mathbf{a}_3$                              | $=$ | $ax_2\hat{\mathbf{x}} + \frac{1}{4}c\hat{\mathbf{z}}$                                 | (4a)                | Pd II        |
| $\mathbf{B}_4$    | $= \frac{3}{4}\mathbf{a}_1 - (x_2 - \frac{1}{4})\mathbf{a}_2 - (x_2 - \frac{1}{2})\mathbf{a}_3$              | $=$ | $-ax_2\hat{\mathbf{x}} + \frac{1}{2}b\hat{\mathbf{y}} + \frac{1}{4}c\hat{\mathbf{z}}$ | (4a)                | Pd II        |
| $\mathbf{B}_5$    | $= (y_3 + z_3)\mathbf{a}_1 + (x_3 + z_3)\mathbf{a}_2 + (x_3 + y_3)\mathbf{a}_3$                              | $=$ | $ax_3\hat{\mathbf{x}} + by_3\hat{\mathbf{y}} + cz_3\hat{\mathbf{z}}$                  | (8d)                | K I          |
| $\mathbf{B}_6$    | $= (-y_3 + z_3 + \frac{1}{2})\mathbf{a}_1 - (x_3 - z_3)\mathbf{a}_2 - (x_3 + y_3 - \frac{1}{2})\mathbf{a}_3$ | $=$ | $-ax_3\hat{\mathbf{x}} - b(y_3 - \frac{1}{2})\hat{\mathbf{y}} + cz_3\hat{\mathbf{z}}$ | (8d)                | K I          |
| $\mathbf{B}_7$    | $= (y_3 - z_3)\mathbf{a}_1 - (x_3 + z_3 - \frac{1}{2})\mathbf{a}_2 + (-x_3 + y_3 + \frac{1}{2})\mathbf{a}_3$ | $=$ | $-a(x_3 - \frac{1}{2})\hat{\mathbf{x}} + by_3\hat{\mathbf{y}} - cz_3\hat{\mathbf{z}}$ | (8d)                | K I          |
| $\mathbf{B}_8$    | $= -(y_3 + z_3 - \frac{1}{2})\mathbf{a}_1 + (x_3 - z_3 + \frac{1}{2})\mathbf{a}_2 + (x_3 - y_3)\mathbf{a}_3$ | $=$ | $ax_3\hat{\mathbf{x}} - by_3\hat{\mathbf{y}} - c(z_3 - \frac{1}{2})\hat{\mathbf{z}}$  | (8d)                | K I          |
| $\mathbf{B}_9$    | $= (y_4 + z_4)\mathbf{a}_1 + (x_4 + z_4)\mathbf{a}_2 + (x_4 + y_4)\mathbf{a}_3$                              | $=$ | $ax_4\hat{\mathbf{x}} + by_4\hat{\mathbf{y}} + cz_4\hat{\mathbf{z}}$                  | (8d)                | K II         |
| $\mathbf{B}_{10}$ | $= (-y_4 + z_4 + \frac{1}{2})\mathbf{a}_1 - (x_4 - z_4)\mathbf{a}_2 - (x_4 + y_4 - \frac{1}{2})\mathbf{a}_3$ | $=$ | $-ax_4\hat{\mathbf{x}} - b(y_4 - \frac{1}{2})\hat{\mathbf{y}} + cz_4\hat{\mathbf{z}}$ | (8d)                | K II         |
| $\mathbf{B}_{11}$ | $= (y_4 - z_4)\mathbf{a}_1 - (x_4 + z_4 - \frac{1}{2})\mathbf{a}_2 + (-x_4 + y_4 + \frac{1}{2})\mathbf{a}_3$ | $=$ | $-a(x_4 - \frac{1}{2})\hat{\mathbf{x}} + by_4\hat{\mathbf{y}} - cz_4\hat{\mathbf{z}}$ | (8d)                | K II         |
| $\mathbf{B}_{12}$ | $= -(y_4 + z_4 - \frac{1}{2})\mathbf{a}_1 + (x_4 - z_4 + \frac{1}{2})\mathbf{a}_2 + (x_4 - y_4)\mathbf{a}_3$ | $=$ | $ax_4\hat{\mathbf{x}} - by_4\hat{\mathbf{y}} - c(z_4 - \frac{1}{2})\hat{\mathbf{z}}$  | (8d)                | K II         |
| $\mathbf{B}_{13}$ | $= (y_5 + z_5)\mathbf{a}_1 + (x_5 + z_5)\mathbf{a}_2 + (x_5 + y_5)\mathbf{a}_3$                              | $=$ | $ax_5\hat{\mathbf{x}} + by_5\hat{\mathbf{y}} + cz_5\hat{\mathbf{z}}$                  | (8d)                | Se I         |
| $\mathbf{B}_{14}$ | $= (-y_5 + z_5 + \frac{1}{2})\mathbf{a}_1 - (x_5 - z_5)\mathbf{a}_2 - (x_5 + y_5 - \frac{1}{2})\mathbf{a}_3$ | $=$ | $-ax_5\hat{\mathbf{x}} - b(y_5 - \frac{1}{2})\hat{\mathbf{y}} + cz_5\hat{\mathbf{z}}$ | (8d)                | Se I         |
| $\mathbf{B}_{15}$ | $= (y_5 - z_5)\mathbf{a}_1 - (x_5 + z_5 - \frac{1}{2})\mathbf{a}_2 + (-x_5 + y_5 + \frac{1}{2})\mathbf{a}_3$ | $=$ | $-a(x_5 - \frac{1}{2})\hat{\mathbf{x}} + by_5\hat{\mathbf{y}} - cz_5\hat{\mathbf{z}}$ | (8d)                | Se I         |
| $\mathbf{B}_{16}$ | $= -(y_5 + z_5 - \frac{1}{2})\mathbf{a}_1 + (x_5 - z_5 + \frac{1}{2})\mathbf{a}_2 + (x_5 - y_5)\mathbf{a}_3$ | $=$ | $ax_5\hat{\mathbf{x}} - by_5\hat{\mathbf{y}} - c(z_5 - \frac{1}{2})\hat{\mathbf{z}}$  | (8d)                | Se I         |
| $\mathbf{B}_{17}$ | $= (y_6 + z_6)\mathbf{a}_1 + (x_6 + z_6)\mathbf{a}_2 + (x_6 + y_6)\mathbf{a}_3$                              | $=$ | $ax_6\hat{\mathbf{x}} + by_6\hat{\mathbf{y}} + cz_6\hat{\mathbf{z}}$                  | (8d)                | Se II        |

$$\begin{aligned}
\mathbf{B}_{18} &= \begin{pmatrix} -y_6 + z_6 + \frac{1}{2} \\ x_6 - z_6 \end{pmatrix} \mathbf{a}_1 - \begin{pmatrix} x_6 + y_6 - \frac{1}{2} \\ -x_6 + y_6 + \frac{1}{2} \end{pmatrix} \mathbf{a}_3 &= & -ax_6 \hat{\mathbf{x}} - b(y_6 - \frac{1}{2}) \hat{\mathbf{y}} + cz_6 \hat{\mathbf{z}} & (8d) & \text{Se II} \\
\mathbf{B}_{19} &= (y_6 - z_6) \mathbf{a}_1 - (x_6 + z_6 - \frac{1}{2}) \mathbf{a}_2 + \begin{pmatrix} -x_6 + y_6 + \frac{1}{2} \\ \end{pmatrix} \mathbf{a}_3 &= & -a(x_6 - \frac{1}{2}) \hat{\mathbf{x}} + by_6 \hat{\mathbf{y}} - cz_6 \hat{\mathbf{z}} & (8d) & \text{Se II} \\
\mathbf{B}_{20} &= \begin{pmatrix} -(y_6 + z_6 - \frac{1}{2}) \\ x_6 - z_6 + \frac{1}{2} \end{pmatrix} \mathbf{a}_1 + \begin{pmatrix} x_6 - y_6 \\ \end{pmatrix} \mathbf{a}_3 &= & ax_6 \hat{\mathbf{x}} - by_6 \hat{\mathbf{y}} - c(z_6 - \frac{1}{2}) \hat{\mathbf{z}} & (8d) & \text{Se II} \\
\mathbf{B}_{21} &= (y_7 + z_7) \mathbf{a}_1 + (x_7 + z_7) \mathbf{a}_2 + (x_7 + y_7) \mathbf{a}_3 &= & ax_7 \hat{\mathbf{x}} + by_7 \hat{\mathbf{y}} + cz_7 \hat{\mathbf{z}} & (8d) & \text{Se III} \\
\mathbf{B}_{22} &= \begin{pmatrix} -y_7 + z_7 + \frac{1}{2} \\ x_7 - z_7 \end{pmatrix} \mathbf{a}_1 - \begin{pmatrix} x_7 + y_7 - \frac{1}{2} \\ \end{pmatrix} \mathbf{a}_3 &= & -ax_7 \hat{\mathbf{x}} - b(y_7 - \frac{1}{2}) \hat{\mathbf{y}} + cz_7 \hat{\mathbf{z}} & (8d) & \text{Se III} \\
\mathbf{B}_{23} &= (y_7 - z_7) \mathbf{a}_1 - (x_7 + z_7 - \frac{1}{2}) \mathbf{a}_2 + \begin{pmatrix} -x_7 + y_7 + \frac{1}{2} \\ \end{pmatrix} \mathbf{a}_3 &= & -a(x_7 - \frac{1}{2}) \hat{\mathbf{x}} + by_7 \hat{\mathbf{y}} - cz_7 \hat{\mathbf{z}} & (8d) & \text{Se III} \\
\mathbf{B}_{24} &= \begin{pmatrix} -(y_7 + z_7 - \frac{1}{2}) \\ x_7 - z_7 + \frac{1}{2} \end{pmatrix} \mathbf{a}_1 + \begin{pmatrix} x_7 - y_7 \\ \end{pmatrix} \mathbf{a}_3 &= & ax_7 \hat{\mathbf{x}} - by_7 \hat{\mathbf{y}} - c(z_7 - \frac{1}{2}) \hat{\mathbf{z}} & (8d) & \text{Se III} \\
\mathbf{B}_{25} &= (y_8 + z_8) \mathbf{a}_1 + (x_8 + z_8) \mathbf{a}_2 + (x_8 + y_8) \mathbf{a}_3 &= & ax_8 \hat{\mathbf{x}} + by_8 \hat{\mathbf{y}} + cz_8 \hat{\mathbf{z}} & (8d) & \text{Se IV} \\
\mathbf{B}_{26} &= \begin{pmatrix} -y_8 + z_8 + \frac{1}{2} \\ x_8 - z_8 \end{pmatrix} \mathbf{a}_1 - \begin{pmatrix} x_8 + y_8 - \frac{1}{2} \\ \end{pmatrix} \mathbf{a}_3 &= & -ax_8 \hat{\mathbf{x}} - b(y_8 - \frac{1}{2}) \hat{\mathbf{y}} + cz_8 \hat{\mathbf{z}} & (8d) & \text{Se IV} \\
\mathbf{B}_{27} &= (y_8 - z_8) \mathbf{a}_1 - (x_8 + z_8 - \frac{1}{2}) \mathbf{a}_2 + \begin{pmatrix} -x_8 + y_8 + \frac{1}{2} \\ \end{pmatrix} \mathbf{a}_3 &= & -a(x_8 - \frac{1}{2}) \hat{\mathbf{x}} + by_8 \hat{\mathbf{y}} - cz_8 \hat{\mathbf{z}} & (8d) & \text{Se IV} \\
\mathbf{B}_{28} &= \begin{pmatrix} -(y_8 + z_8 - \frac{1}{2}) \\ x_8 - z_8 + \frac{1}{2} \end{pmatrix} \mathbf{a}_1 + \begin{pmatrix} x_8 - y_8 \\ \end{pmatrix} \mathbf{a}_3 &= & ax_8 \hat{\mathbf{x}} - by_8 \hat{\mathbf{y}} - c(z_8 - \frac{1}{2}) \hat{\mathbf{z}} & (8d) & \text{Se IV} \\
\mathbf{B}_{29} &= (y_9 + z_9) \mathbf{a}_1 + (x_9 + z_9) \mathbf{a}_2 + (x_9 + y_9) \mathbf{a}_3 &= & ax_9 \hat{\mathbf{x}} + by_9 \hat{\mathbf{y}} + cz_9 \hat{\mathbf{z}} & (8d) & \text{Se V} \\
\mathbf{B}_{30} &= \begin{pmatrix} -y_9 + z_9 + \frac{1}{2} \\ x_9 - z_9 \end{pmatrix} \mathbf{a}_1 - \begin{pmatrix} x_9 + y_9 - \frac{1}{2} \\ \end{pmatrix} \mathbf{a}_3 &= & -ax_9 \hat{\mathbf{x}} - b(y_9 - \frac{1}{2}) \hat{\mathbf{y}} + cz_9 \hat{\mathbf{z}} & (8d) & \text{Se V} \\
\mathbf{B}_{31} &= (y_9 - z_9) \mathbf{a}_1 - (x_9 + z_9 - \frac{1}{2}) \mathbf{a}_2 + \begin{pmatrix} -x_9 + y_9 + \frac{1}{2} \\ \end{pmatrix} \mathbf{a}_3 &= & -a(x_9 - \frac{1}{2}) \hat{\mathbf{x}} + by_9 \hat{\mathbf{y}} - cz_9 \hat{\mathbf{z}} & (8d) & \text{Se V} \\
\mathbf{B}_{32} &= \begin{pmatrix} -(y_9 + z_9 - \frac{1}{2}) \\ x_9 - z_9 + \frac{1}{2} \end{pmatrix} \mathbf{a}_1 + \begin{pmatrix} x_9 - y_9 \\ \end{pmatrix} \mathbf{a}_3 &= & ax_9 \hat{\mathbf{x}} - by_9 \hat{\mathbf{y}} - c(z_9 - \frac{1}{2}) \hat{\mathbf{z}} & (8d) & \text{Se V} \\
\mathbf{B}_{33} &= (y_{10} + z_{10}) \mathbf{a}_1 + (x_{10} + z_{10}) \mathbf{a}_2 + (x_{10} + y_{10}) \mathbf{a}_3 &= & ax_{10} \hat{\mathbf{x}} + by_{10} \hat{\mathbf{y}} + cz_{10} \hat{\mathbf{z}} & (8d) & \text{Se VI} \\
\mathbf{B}_{34} &= \begin{pmatrix} -y_{10} + z_{10} + \frac{1}{2} \\ x_{10} - z_{10} \end{pmatrix} \mathbf{a}_1 - \begin{pmatrix} x_{10} + y_{10} - \frac{1}{2} \\ \end{pmatrix} \mathbf{a}_3 &= & -ax_{10} \hat{\mathbf{x}} - b(y_{10} - \frac{1}{2}) \hat{\mathbf{y}} + cz_{10} \hat{\mathbf{z}} & (8d) & \text{Se VI} \\
\mathbf{B}_{35} &= \begin{pmatrix} (y_{10} - z_{10}) \\ x_{10} + z_{10} - \frac{1}{2} \end{pmatrix} \mathbf{a}_1 + \begin{pmatrix} -x_{10} + y_{10} + \frac{1}{2} \\ \end{pmatrix} \mathbf{a}_3 &= & -a(x_{10} - \frac{1}{2}) \hat{\mathbf{x}} + by_{10} \hat{\mathbf{y}} - cz_{10} \hat{\mathbf{z}} & (8d) & \text{Se VI} \\
\mathbf{B}_{36} &= \begin{pmatrix} -(y_{10} + z_{10} - \frac{1}{2}) \\ x_{10} - z_{10} + \frac{1}{2} \end{pmatrix} \mathbf{a}_1 + \begin{pmatrix} x_{10} - y_{10} \\ \end{pmatrix} \mathbf{a}_3 &= & ax_{10} \hat{\mathbf{x}} - by_{10} \hat{\mathbf{y}} - c(z_{10} - \frac{1}{2}) \hat{\mathbf{z}} & (8d) & \text{Se VI} \\
\mathbf{B}_{37} &= (y_{11} + z_{11}) \mathbf{a}_1 + (x_{11} + z_{11}) \mathbf{a}_2 + (x_{11} + y_{11}) \mathbf{a}_3 &= & ax_{11} \hat{\mathbf{x}} + by_{11} \hat{\mathbf{y}} + cz_{11} \hat{\mathbf{z}} & (8d) & \text{Se VII} \\
\mathbf{B}_{38} &= \begin{pmatrix} -y_{11} + z_{11} + \frac{1}{2} \\ x_{11} - z_{11} \end{pmatrix} \mathbf{a}_1 - \begin{pmatrix} x_{11} + y_{11} - \frac{1}{2} \\ \end{pmatrix} \mathbf{a}_3 &= & -ax_{11} \hat{\mathbf{x}} - b(y_{11} - \frac{1}{2}) \hat{\mathbf{y}} + cz_{11} \hat{\mathbf{z}} & (8d) & \text{Se VII}
\end{aligned}$$

$$\begin{aligned}
\mathbf{B}_{39} &= \begin{pmatrix} (y_{11} - z_{11}) \mathbf{a}_1 - \\ (x_{11} + z_{11} - \frac{1}{2}) \mathbf{a}_2 + \\ (-x_{11} + y_{11} + \frac{1}{2}) \mathbf{a}_3 \end{pmatrix} = -a \left( x_{11} - \frac{1}{2} \right) \hat{\mathbf{x}} + by_{11} \hat{\mathbf{y}} - cz_{11} \hat{\mathbf{z}} & (8d) & \text{Se VII} \\
\mathbf{B}_{40} &= \begin{pmatrix} -(y_{11} + z_{11} - \frac{1}{2}) \mathbf{a}_1 + \\ (x_{11} - z_{11} + \frac{1}{2}) \mathbf{a}_2 + \\ (x_{11} - y_{11}) \mathbf{a}_3 \end{pmatrix} = ax_{11} \hat{\mathbf{x}} - by_{11} \hat{\mathbf{y}} - c \left( z_{11} - \frac{1}{2} \right) \hat{\mathbf{z}} & (8d) & \text{Se VII} \\
\mathbf{B}_{41} &= \begin{pmatrix} (y_{12} + z_{12}) \mathbf{a}_1 + (x_{12} + z_{12}) \mathbf{a}_2 + \\ (x_{12} + y_{12}) \mathbf{a}_3 \end{pmatrix} = ax_{12} \hat{\mathbf{x}} + by_{12} \hat{\mathbf{y}} + cz_{12} \hat{\mathbf{z}} & (8d) & \text{Se VIII} \\
\mathbf{B}_{42} &= \begin{pmatrix} (-y_{12} + z_{12} + \frac{1}{2}) \mathbf{a}_1 - \\ (x_{12} - z_{12}) \mathbf{a}_2 - \\ (x_{12} + y_{12} - \frac{1}{2}) \mathbf{a}_3 \end{pmatrix} = -ax_{12} \hat{\mathbf{x}} - b \left( y_{12} - \frac{1}{2} \right) \hat{\mathbf{y}} + cz_{12} \hat{\mathbf{z}} & (8d) & \text{Se VIII} \\
\mathbf{B}_{43} &= \begin{pmatrix} (y_{12} - z_{12}) \mathbf{a}_1 - \\ (x_{12} + z_{12} - \frac{1}{2}) \mathbf{a}_2 + \\ (-x_{12} + y_{12} + \frac{1}{2}) \mathbf{a}_3 \end{pmatrix} = -a \left( x_{12} - \frac{1}{2} \right) \hat{\mathbf{x}} + by_{12} \hat{\mathbf{y}} - cz_{12} \hat{\mathbf{z}} & (8d) & \text{Se VIII} \\
\mathbf{B}_{44} &= \begin{pmatrix} -(y_{12} + z_{12} - \frac{1}{2}) \mathbf{a}_1 + \\ (x_{12} - z_{12} + \frac{1}{2}) \mathbf{a}_2 + \\ (x_{12} - y_{12}) \mathbf{a}_3 \end{pmatrix} = ax_{12} \hat{\mathbf{x}} - by_{12} \hat{\mathbf{y}} - c \left( z_{12} - \frac{1}{2} \right) \hat{\mathbf{z}} & (8d) & \text{Se VIII} \\
\mathbf{B}_{45} &= \begin{pmatrix} (y_{13} + z_{13}) \mathbf{a}_1 + (x_{13} + z_{13}) \mathbf{a}_2 + \\ (x_{13} + y_{13}) \mathbf{a}_3 \end{pmatrix} = ax_{13} \hat{\mathbf{x}} + by_{13} \hat{\mathbf{y}} + cz_{13} \hat{\mathbf{z}} & (8d) & \text{Se IX} \\
\mathbf{B}_{46} &= \begin{pmatrix} (-y_{13} + z_{13} + \frac{1}{2}) \mathbf{a}_1 - \\ (x_{13} - z_{13}) \mathbf{a}_2 - \\ (x_{13} + y_{13} - \frac{1}{2}) \mathbf{a}_3 \end{pmatrix} = -ax_{13} \hat{\mathbf{x}} - b \left( y_{13} - \frac{1}{2} \right) \hat{\mathbf{y}} + cz_{13} \hat{\mathbf{z}} & (8d) & \text{Se IX} \\
\mathbf{B}_{47} &= \begin{pmatrix} (y_{13} - z_{13}) \mathbf{a}_1 - \\ (x_{13} + z_{13} - \frac{1}{2}) \mathbf{a}_2 + \\ (-x_{13} + y_{13} + \frac{1}{2}) \mathbf{a}_3 \end{pmatrix} = -a \left( x_{13} - \frac{1}{2} \right) \hat{\mathbf{x}} + by_{13} \hat{\mathbf{y}} - cz_{13} \hat{\mathbf{z}} & (8d) & \text{Se IX} \\
\mathbf{B}_{48} &= \begin{pmatrix} -(y_{13} + z_{13} - \frac{1}{2}) \mathbf{a}_1 + \\ (x_{13} - z_{13} + \frac{1}{2}) \mathbf{a}_2 + \\ (x_{13} - y_{13}) \mathbf{a}_3 \end{pmatrix} = ax_{13} \hat{\mathbf{x}} - by_{13} \hat{\mathbf{y}} - c \left( z_{13} - \frac{1}{2} \right) \hat{\mathbf{z}} & (8d) & \text{Se IX} \\
\mathbf{B}_{49} &= \begin{pmatrix} (y_{14} + z_{14}) \mathbf{a}_1 + (x_{14} + z_{14}) \mathbf{a}_2 + \\ (x_{14} + y_{14}) \mathbf{a}_3 \end{pmatrix} = ax_{14} \hat{\mathbf{x}} + by_{14} \hat{\mathbf{y}} + cz_{14} \hat{\mathbf{z}} & (8d) & \text{Se X} \\
\mathbf{B}_{50} &= \begin{pmatrix} (-y_{14} + z_{14} + \frac{1}{2}) \mathbf{a}_1 - \\ (x_{14} - z_{14}) \mathbf{a}_2 - \\ (x_{14} + y_{14} - \frac{1}{2}) \mathbf{a}_3 \end{pmatrix} = -ax_{14} \hat{\mathbf{x}} - b \left( y_{14} - \frac{1}{2} \right) \hat{\mathbf{y}} + cz_{14} \hat{\mathbf{z}} & (8d) & \text{Se X} \\
\mathbf{B}_{51} &= \begin{pmatrix} (y_{14} - z_{14}) \mathbf{a}_1 - \\ (x_{14} + z_{14} - \frac{1}{2}) \mathbf{a}_2 + \\ (-x_{14} + y_{14} + \frac{1}{2}) \mathbf{a}_3 \end{pmatrix} = -a \left( x_{14} - \frac{1}{2} \right) \hat{\mathbf{x}} + by_{14} \hat{\mathbf{y}} - cz_{14} \hat{\mathbf{z}} & (8d) & \text{Se X} \\
\mathbf{B}_{52} &= \begin{pmatrix} -(y_{14} + z_{14} - \frac{1}{2}) \mathbf{a}_1 + \\ (x_{14} - z_{14} + \frac{1}{2}) \mathbf{a}_2 + \\ (x_{14} - y_{14}) \mathbf{a}_3 \end{pmatrix} = ax_{14} \hat{\mathbf{x}} - by_{14} \hat{\mathbf{y}} - c \left( z_{14} - \frac{1}{2} \right) \hat{\mathbf{z}} & (8d) & \text{Se X}
\end{aligned}$$

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