$$A_{01} = \begin{pmatrix} \cos(q_1) & 0 & \sin(q_1) & 33\cos(q_1) \\ \sin(q_1) & 0 & -\cos(q_1) & 33\sin(q_1) \\ 0 & 1 & 0 & 147 \\ 0 & 0 & 0 & 1 \end{pmatrix} \tag{1}$$

$$A_{12} = \begin{pmatrix} \cos(q_2) & -\sin(q_2) & 0 & 155\cos(q_2) \\ \sin(q_2) & \cos(q_2) & 0 & 155\sin(q_2) \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} \tag{2}$$

$$A_{23} = \begin{pmatrix} \cos(q_3) & -\sin(q_3) & 0 & 135\cos(q_3) \\ \sin(q_3) & \cos(q_3) & 0 & 135\sin(q_3) \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} \tag{3}$$

$$A_{34} = \begin{pmatrix} \cos(q_4) & 0 & \sin(q_4) & 0 \\ \sin(q_4) & 0 & -\cos(q_4) & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} \tag{4}$$

$$A_{45} = \begin{pmatrix} \cos(q_5) & -\sin(q_5) & 0 & 0 \\ \sin(q_5) & \cos(q_5) & 0 & 0 \\ 0 & 0 & 1 & \frac{435}{2} \\ 0 & 0 & 0 & 1 \end{pmatrix} \tag{5}$$

$$A_{01} = \begin{pmatrix} \cos(q_1) & -\sin(q_1) & 0 & 0 \\ \sin(q_1) & \cos(q_1) & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} \tag{6}$$

$$A_{02} = \begin{pmatrix} \cos(q_1)\cos(q_2) & -\cos(q_1)\sin(q_2) & \sin(q_1) & 33\cos(q_1) \\ \cos(q_2)\sin(q_1) & -\sin(q_1)\sin(q_2) & -\cos(q_1) & 33\sin(q_1) \\ \sin(q_2) & \cos(q_2) & 0 & 147 \\ 0 & 0 & 0 & 1 \end{pmatrix} \tag{7}$$

$$A_{03} = \begin{pmatrix} \cos(q_2+q_3)\cos(q_1) & -\sin(q_2+q_3)\cos(q_1) & \sin(q_1) & \cos(q_1)\,(155\cos(q_2)+33) \\ \cos(q_2+q_3)\sin(q_1) & -\sin(q_2+q_3)\sin(q_1) & -\cos(q_1) & \sin(q_1)\,(155\cos(q_2)+33) \\ \sin(q_2+q_3) & \cos(q_2+q_3) & 0 & 155\sin(q_2)+147 \\ 0 & 0 & 0 & 1 \end{pmatrix} \tag{8}$$

$$A_{04} = \begin{pmatrix} \cos(q_2+q_3+q_4)\cos(q_1) & -\sin(q_2+q_3+q_4)\cos(q_1) & \sin(q_1) & \cos(q_1)\,(135\cos(q_2+q_3)+155\cos(q_2)+33) \\ \cos(q_2+q_3+q_4)\sin(q_1) & -\sin(q_2+q_3+q_4)\sin(q_1) & -\cos(q_1) & \sin(q_1)\,(135\cos(q_2+q_3)+155\cos(q_2)+33) \\ \sin(q_2+q_3+q_4) & \cos(q_2+q_3+q_4) & 0 & 135\sin(q_2+q_3)+155\sin(q_2)+147 \\ 0 & 0 & 0 & 1 \end{pmatrix} \tag{9}$$

$$A_{05} = \begin{pmatrix} \sin(q_1)\sin(q_5)+\cos(q_2+q_3+q_4)\cos(q_1)\cos(q_5) & \cos(q_5)\sin(q_1)-\cos(q_2+q_3+q_4)\cos(q_1)\sin(q_5) & \sin(q_2+q_3+q_4)\cos(q_1) & \cos(q_1)\,(135\cos(q_2+q_3)+155\,c \\ \cos(q_2+q_3+q_4)\cos(q_5)\sin(q_1)-\cos(q_1)\sin(q_5) & -\cos(q_1)\cos(q_5)-\cos(q_2+q_3+q_4)\sin(q_1)\sin(q_5) & \sin(q_2+q_3+q_4)\sin(q_1) & \sin(q_1)\,(135\cos(q_2+q_3)+155\,c \\ \sin(q_2+q_3+q_4)\cos(q_5) & -\sin(q_2+q_3+q_4)\sin(q_5) & -\cos(q_2+q_3+q_4) & 135\sin(q_2+q_3)+155\sin(q \\ 0 & 0 & 0 & 1 \end{pmatrix} \tag{10}$$

$$w_1 = \begin{pmatrix} 0 & 0 & 1 & 0 \end{pmatrix} \tag{11}$$

$$w_2 = \begin{pmatrix} \sin(q_2) & \cos(q_2) & 0 & 147 \end{pmatrix} \tag{12}$$

$$w_3 = \begin{pmatrix} \sin(q_2+q_3) & \cos(q_2+q_3) & 0 & 155\sin(q_2)+147 \end{pmatrix} \tag{13}$$

$$w_4 = \begin{pmatrix} \sin(q_2+q_3+q_4) & \cos(q_2+q_3+q_4) & 0 & 135\sin(q_2+q_3)+155\sin(q_2)+147 \end{pmatrix} \tag{14}$$

$$w_5 = \begin{pmatrix} \sin(q_2+q_3+q_4)\cos(q_5) & -\sin(q_2+q_3+q_4)\sin(q_5) & -\cos(q_2+q_3+q_4) & 135\sin(q_2+q_3)+155\sin(q_2)+147 \end{pmatrix} \tag{15}$$

$$p_1 = g\,m_1\,\mathrm{rz}_1 \tag{16}$$

$$p_2 = g\,m_2\,(\mathrm{ry}_2\,\cos(q_2) + \mathrm{rx}_2\,\sin(q_2) + 147) \tag{17}$$

$$p_3 = g\,m_3\,(155\,\sin(q_2) + \mathrm{ry}_3\,\cos(q_2+q_3) + \mathrm{rx}_3\,\sin(q_2+q_3) + 147) \tag{18}$$

$$p_4 = g\,m_4\,(135\,\sin(q_2+q_3) + 155\,\sin(q_2) + \mathrm{ry}_4\,\cos(q_2+q_3+q_4) + \mathrm{rx}_4\,\sin(q_2+q_3+q_4) + 147) \tag{19}$$

$$p_5 = g\,m_5\,(135\,\sin(q_2+q_3) + 155\,\sin(q_2) + 147) - g\,m_5\,\mathrm{rz}_5\,\cos(q_2+q_3+q_4) + g\,m_5\,\mathrm{rx}_5\,\sin(q_2+q_3+q_4)\,\cos(q_5) - g\,m_5\,\mathrm{ry}_5\,\sin(q_2+q_3+q_4)\,\sin(q_5) \tag{20}$$

$P_1 = 147\,g\,m_2 + g\,m_1\,\mathrm{rz}_1 + g\,m_3\,(155\,\sin(q_2) + 147) + g\,m_4\,(135\,\sin(q_2+q_3) + 155\,\sin(q_2) + 147) + g\,m_5\,(135\,\sin(q_2+q_3) + 155\,\sin(q_2) + 147) + g\,m_3\,\mathrm{ry}_3\,\cos(q_2+q_3) + g\,m_3\,\mathrm{rx}_3\,\sin(q_2+q_3) + g\,m_2\,\mathrm{ry}_2\,\cos(q_2) + g\,m_2\,\mathrm{rx}_2\,\sin(q_2) + g\,m_4\,\mathrm{ry}_4\,\cos(q_2+q_3+q_4) - g\,m_5\,\mathrm{rz}_5\,\cos(q_2+q_3+q_4) + g\,m_4\,\mathrm{rx}_4\,\sin(q_2+q_3+q_4) + g\,m_5\,\mathrm{rx}_5\,\sin(q_2+q_3+q_4)\,\cos(q_5) - g\,m_5\,\mathrm{ry}_5\,\sin(q_2+q_3+q_4)\,\sin(q_5)$

$P_2 = 147\,g\,m_2 + g\,m_3\,(155\,\sin(q_2) + 147) + g\,m_4\,(135\,\sin(q_2+q_3) + 155\,\sin(q_2) + 147) + g\,m_5\,(135\,\sin(q_2+q_3) + 155\,\sin(q_2) + 147) + g\,m_3\,\mathrm{ry}_3\,\cos(q_2+q_3) + g\,m_3\,\mathrm{rx}_3\,\sin(q_2+q_3) + g\,m_2\,\mathrm{ry}_2\,\cos(q_2) + g\,m_2\,\mathrm{rx}_2\,\sin(q_2) + g\,m_4\,\mathrm{ry}_4\,\cos(q_2+q_3+q_4) - g\,m_5\,\mathrm{rz}_5\,\cos(q_2+q_3+q_4) + g\,m_4\,\mathrm{rx}_4\,\sin(q_2+q_3+q_4) + g\,m_5\,\mathrm{rx}_5\,\sin(q_2+q_3+q_4)\,\cos(q_5) - g\,m_5\,\mathrm{ry}_5\,\sin(q_2+q_3+q_4)\,\sin(q_5)$

$P_3 = g\,m_3\,(155\,\sin(q_2) + 147) + g\,m_4\,(135\,\sin(q_2+q_3) + 155\,\sin(q_2) + 147) + g\,m_5\,(135\,\sin(q_2+q_3) + 155\,\sin(q_2) + 147) + g\,m_3\,\mathrm{ry}_3\,\cos(q_2+q_3) + g\,m_3\,\mathrm{rx}_3\,\sin(q_2+q_3) + g\,m_4\,\mathrm{ry}_4\,\cos(q_2+q_3+q_4) - g\,m_5\,\mathrm{rz}_5\,\cos(q_2+q_3+q_4) + g\,m_4\,\mathrm{rx}_4\,\sin(q_2+q_3+q_4) + g\,m_5\,\mathrm{rx}_5\,\sin(q_2+q_3+q_4)\,\cos(q_5) - g\,m_5\,\mathrm{ry}_5\,\sin(q_2+q_3+q_4)\,\sin(q_5)$

$P_4 = g\,m_4\,(135\,\sin(q_2+q_3) + 155\,\sin(q_2) + 147) + g\,m_5\,(135\,\sin(q_2+q_3) + 155\,\sin(q_2) + 147) + g\,m_4\,\mathrm{ry}_4\,\cos(q_2+q_3+q_4) - g\,m_5\,\mathrm{rz}_5\,\cos(q_2+q_3+q_4) + g\,m_4\,\mathrm{rx}_4\,\sin(q_2+q_3+q_4) + g\,m_5\,\mathrm{rx}_5\,\sin(q_2+q_3+q_4)\,\cos(q_5) - g\,m_5\,\mathrm{ry}_5\,\sin(q_2+q_3+q_4)\,\sin(q_5)$

$P_5 = g\,m_5\,(135\,\sin(q_2+q_3) + 155\,\sin(q_2) + 147) - g\,m_5\,\mathrm{rz}_5\,\cos(q_2+q_3+q_4) + g\,m_5\,\mathrm{rx}_5\,\sin(q_2+q_3+q_4)\,\cos(q_5) - g\,m_5\,\mathrm{ry}_5\,\sin(q_2+q_3+q_4)\,\sin(q_5)$

$$W_1 = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{21}$$

$$W_2 = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{22}$$

$$W_3 = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{23}$$

$$W_4 = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{24}$$

$$W_5 = \begin{pmatrix} 0 \\ \cos(q_2) \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{25}$$

$$W_6 = \begin{pmatrix} 0 \\ -\sin(q_2) \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{26}$$

$$W_7 = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{27}$$

$$W_8 = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{28}$$

$$W_9 = \begin{pmatrix} 0 \\ \cos(q_2 + q_3) \\ \cos(q_2 + q_3) \\ 0 \\ 0 \end{pmatrix} \tag{29}$$

$$W_{10} = \begin{pmatrix} 0 \\ -\sin(q_2 + q_3) \\ -\sin(q_2 + q_3) \\ 0 \\ 0 \end{pmatrix} \tag{30}$$

$$W_{11} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{31}$$

$$W_{12} = \begin{pmatrix} 0 \\ 155\,\cos(q_2) \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{32}$$

$$W_{13} = \begin{pmatrix} 0 \\ \cos(q_2 + q_3 + q_4) \\ \cos(q_2 + q_3 + q_4) \\ \cos(q_2 + q_3 + q_4) \\ 0 \end{pmatrix} \tag{33}$$

$$W_{14} = \begin{pmatrix} 0 \\ -\sin(q_2+q_3+q_4) \\ -\sin(q_2+q_3+q_4) \\ -\sin(q_2+q_3+q_4) \\ 0 \end{pmatrix} \tag{34}$$

$$W_{15} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{35}$$

$$W_{16} = \begin{pmatrix} 0 \\ 135\cos(q_2+q_3)+155\cos(q_2) \\ 135\cos(q_2+q_3) \\ 0 \\ 0 \end{pmatrix} \tag{36}$$

$$W_{17} = \begin{pmatrix} 0 \\ \cos(q_2+q_3+q_4)\cos(q_5) \\ \cos(q_2+q_3+q_4)\cos(q_5) \\ \cos(q_2+q_3+q_4)\cos(q_5) \\ -\sin(q_2+q_3+q_4)\sin(q_5) \end{pmatrix} \tag{37}$$

$$W_{18} = \begin{pmatrix} 0 \\ -\cos(q_2+q_3+q_4)\sin(q_5) \\ -\cos(q_2+q_3+q_4)\sin(q_5) \\ -\cos(q_2+q_3+q_4)\sin(q_5) \\ -\sin(q_2+q_3+q_4)\cos(q_5) \end{pmatrix} \tag{38}$$

$$W_{19} = \begin{pmatrix} 0 \\ \sin(q_2+q_3+q_4) \\ \sin(q_2+q_3+q_4) \\ \sin(q_2+q_3+q_4) \\ 0 \end{pmatrix} \tag{39}$$

$$W_{20} = \begin{pmatrix} 0 \\ 135\ \cos\left(q_2 + q_3\right) + 155\ \cos\left(q_2\right) \\ 135\ \cos\left(q_2 + q_3\right) \\ 0 \\ 0 \end{pmatrix} \tag{40}$$

$$W_{1_R} = \begin{pmatrix} \cos(\mathrm{q2}) \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{41}$$

$$W_{2_R} = \begin{pmatrix} -\sin(\mathrm{q2}) \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{42}$$

$$W_{3_R} = \begin{pmatrix} \cos(\mathrm{q2} + \mathrm{q3}) \\ \cos(\mathrm{q2} + \mathrm{q3}) \\ 0 \\ 0 \end{pmatrix} \tag{43}$$

$$W_{4_R} = \begin{pmatrix} -\sin(\mathrm{q2} + \mathrm{q3}) \\ -\sin(\mathrm{q2} + \mathrm{q3}) \\ 0 \\ 0 \end{pmatrix} \tag{44}$$

$$W_{5_R} = \begin{pmatrix} 155\ \cos(\mathrm{q2}) \\ 0 \\ 0 \\ 0 \end{pmatrix} \tag{45}$$

$$W_{6_R} = \begin{pmatrix} \cos(\mathrm{q2} + \mathrm{q3} + \mathrm{q4}) \\ \cos(\mathrm{q2} + \mathrm{q3} + \mathrm{q4}) \\ \cos(\mathrm{q2} + \mathrm{q3} + \mathrm{q4}) \\ 0 \end{pmatrix} \tag{46}$$

$$W_{7_R} = \begin{pmatrix} -\sin(\mathrm{q2}+\mathrm{q3}+\mathrm{q4}) \\ -\sin(\mathrm{q2}+\mathrm{q3}+\mathrm{q4}) \\ -\sin(\mathrm{q2}+\mathrm{q3}+\mathrm{q4}) \\ 0 \end{pmatrix} \tag{47}$$

$$W_{8_R} = \begin{pmatrix} 135\,\cos(\mathrm{q2}+\mathrm{q3}) + 155\,\cos(\mathrm{q2}) \\ 135\,\cos(\mathrm{q2}+\mathrm{q3}) \\ 0 \\ 0 \end{pmatrix} \tag{48}$$

$$W_{9_R} = \begin{pmatrix} \cos(\mathrm{q2}+\mathrm{q3}+\mathrm{q4})\,\cos(\mathrm{q5}) \\ \cos(\mathrm{q2}+\mathrm{q3}+\mathrm{q4})\,\cos(\mathrm{q5}) \\ \cos(\mathrm{q2}+\mathrm{q3}+\mathrm{q4})\,\cos(\mathrm{q5}) \\ -\sin(\mathrm{q2}+\mathrm{q3}+\mathrm{q4})\,\sin(\mathrm{q5}) \end{pmatrix} \tag{49}$$

$$W_{10_R} = \begin{pmatrix} -\cos(\mathrm{q2}+\mathrm{q3}+\mathrm{q4})\,\sin(\mathrm{q5}) \\ -\cos(\mathrm{q2}+\mathrm{q3}+\mathrm{q4})\,\sin(\mathrm{q5}) \\ -\cos(\mathrm{q2}+\mathrm{q3}+\mathrm{q4})\,\sin(\mathrm{q5}) \\ -\sin(\mathrm{q2}+\mathrm{q3}+\mathrm{q4})\,\cos(\mathrm{q5}) \end{pmatrix} \tag{50}$$

∞

1 W

$$W = \begin{bmatrix}
-0.488 & -0.873 & 0.200 & 0.980 & -75.682 & 0.899 & -0.437 & -48.656 & 0.440 & -0.784 \\
0.000 & 0.000 & 0.200 & 0.980 & 0.000 & 0.899 & -0.437 & 27.026 & 0.440 & -0.784 \\
0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.899 & -0.437 & 0.000 & 0.440 & -0.784 \\
0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & -0.381 & -0.214 \\
0.767 & -0.641 & 0.501 & 0.866 & 118.919 & 0.248 & -0.969 & 186.514 & -0.109 & 0.223 \\
0.000 & 0.000 & 0.501 & 0.866 & 0.000 & 0.248 & -0.969 & 67.595 & -0.109 & 0.223 \\
0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.248 & -0.969 & 0.000 & -0.109 & 0.223 \\
0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.870 & 0.425 \\
0.974 & -0.227 & -0.883 & -0.469 & 150.938 & 0.876 & 0.483 & 31.738 & 0.483 & -0.730 \\
0.000 & 0.000 & -0.883 & -0.469 & 0.000 & 0.876 & 0.483 & -119.200 & 0.483 & -0.730 \\
0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.876 & 0.483 & 0.000 & 0.483 & -0.730 \\
0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.403 & 0.266 \\
0.156 & -0.988 & 0.195 & -0.981 & 24.216 & -0.099 & -0.995 & 50.524 & 0.084 & 0.053 \\
0.000 & 0.000 & 0.195 & -0.981 & 0.000 & -0.099 & -0.995 & 26.307 & 0.084 & 0.053 \\
0.000 & 0.000 & 0.000 & 0.000 & 0.000 & -0.099 & -0.995 & 0.000 & 0.084 & 0.053 \\
0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & -0.529 & 0.843 \\
-0.812 & -0.584 & -0.776 & 0.631 & -125.800 & 0.981 & -0.196 & -230.570 & -0.073 & 0.978 \\
0.000 & 0.000 & -0.776 & 0.631 & 0.000 & 0.981 & -0.196 & -104.770 & -0.073 & 0.978 \\
0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.981 & -0.196 & 0.000 & -0.073 & 0.978 \\
0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.196 & 0.015
\end{bmatrix} \tag{51}$$

$$W^T W = \begin{bmatrix} 2.458 & 0.032 & 0.087 & -0.936 & 381.058 & -0.207 & -0.055 & 392.789 & 0.244 & -0.943 \\ 0.032 & 2.542 & -0.034 & -0.703 & 5.019 & -1.618 & 1.991 & 0.411 & -0.464 & 0.085 \\ 0.087 & -0.034 & 3.421 & 0.727 & 13.469 & -2.498 & -2.081 & 475.350 & -0.640 & -0.298 \\ -0.936 & -0.703 & 0.727 & 6.579 & -145.156 & 2.800 & -1.283 & -47.010 & -0.036 & 0.665 \\ 381.058 & 5.019 & 13.469 & -145.156 & 59063.928 & -32.132 & -8.598 & 60882.300 & 37.848 & -146.113 \\ -0.207 & -1.618 & -2.498 & 2.800 & -32.132 & 7.825 & -0.915 & -369.380 & 2.135 & -1.009 \\ -0.055 & 1.991 & -2.081 & -1.283 & -8.598 & -0.915 & 7.175 & -289.527 & 0.232 & -1.411 \\ 392.789 & 0.411 & 475.350 & -47.010 & 60882.300 & -369.380 & -289.527 & 125054.597 & -48.495 & -186.348 \\ 0.244 & -0.464 & -0.640 & -0.036 & 37.848 & 2.135 & 0.232 & -48.495 & 2.737 & -2.252 \\ -0.943 & 0.085 & -0.298 & 0.665 & -146.113 & -1.009 & -1.411 & -186.348 & -2.252 & 7.480 \end{bmatrix} \tag{52}$$

$$R = \begin{bmatrix} -547.262 & -3.791 & -350.555 & 134.830 & -84825.659 & 287.497 & 213.786 & -132150.602 & 8.448 & 235.505 \\ 0.000 & -4.975 & 214.424 & 50.291 & 0.000 & -151.845 & -134.679 & 28947.218 & -39.499 & -16.718 \\ 0.000 & 0.000 & -239.366 & -50.897 & -0.000 & 178.389 & 141.794 & -32314.445 & 46.459 & 18.391 \\ 0.000 & 0.000 & 0.000 & -6.039 & 0.000 & -3.603 & 0.007 & -0.000 & -0.229 & -0.342 \\ 0.000 & 0.000 & 0.000 & 0.000 & -0.000 & -0.049 & -0.047 & -0.000 & -0.035 & 0.065 \\ 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & -3.411 & -0.188 & -0.000 & -2.614 & 4.611 \\ 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & -3.925 & 0.000 & -1.401 & 4.467 \\ 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & -0.000 & -0.029 & 0.099 \\ 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & -1.835 & 2.588 \\ 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 0.000 & 3.391 \end{bmatrix} \tag{53}$$