Any change in the representation of the rotation changes the matrices $\mathbf{M}_i$ and $\mathbf{H}$. For the left handed coordinate system (x to the right, y up and z forward) used in our algorithms, the correct matrices are:

$$\mathbf{H} = \begin{pmatrix} 1 & 0 & 0 & 0 & -\bar{t}_z \cos(\bar{\theta}_x) + \bar{t}_y \sin(\bar{\theta}_x) & \bar{t}_y \cos(\bar{\theta}_x)\cos(\bar{\theta}_y) + \bar{t}_z \cos(\bar{\theta}_y)\sin(\bar{\theta}_x) \\ 0 & 1 & 0 & \bar{t}_z & -\bar{t}_x \sin(\bar{\theta}_x) & -\bar{t}_x \cos(\bar{\theta}_x)\cos(\bar{\theta}_y) + \bar{t}_z \sin(\bar{\theta}_y) \\ 0 & 0 & 1 & -\bar{t}_y & \bar{t}_x \cos(\bar{\theta}_x) & -\bar{t}_x \cos(\bar{\theta}_y)\sin(\bar{\theta}_x) - \bar{t}_y \sin(\bar{\theta}_y) \\ 0 & 0 & 0 & 1 & 0 & \sin(\bar{\theta}_y) \\ 0 & 0 & 0 & 0 & \sin(\bar{\theta}_x) & \cos(\bar{\theta}_x)\cos(\bar{\theta}_y) \\ 0 & 0 & 0 & 0 & \cos(\bar{\theta}_x) & -\cos(\bar{\theta}_y)\sin(\bar{\theta}_x) \end{pmatrix}.$$

and

$$\mathbf{M}_i = \begin{pmatrix} 1 & 0 & 0 & 0 & -d_{y,i} & d_{z,i} \\ 0 & 1 & 0 & -d_{z,i} & d_{x,i} & 0 \\ 0 & 0 & 1 & d_{y,i} & 0 & -d_{x,i} \end{pmatrix}.$$

Then $\mathbf{M}^T\mathbf{M}$ as well as $\mathbf{M}^T\mathbf{Z}$ are given by:

$$\mathbf{M}^T\mathbf{M} = \sum_{i=1}^{m} \begin{pmatrix} 1 & 0 & 0 & 0 & -d_{y,i} & d_{z,i} \\ 0 & 1 & 0 & -d_{z,i} & d_{x,i} & 0 \\ 0 & 0 & 1 & d_{y,i} & 0 & -d_{x,i} \\ 0 & -d_{z,i} & d_{y,i} & d_{y,i}^2 + d_{z,i}^2 & -d_{x,i}d_{z,i} & -d_{x,i}d_{y,i} \\ -d_{y,i} & d_{x,i} & 0 & -d_{x,i}d_{z,i} & d_{x,i}^2 + d_{y,i}^2 & -d_{y,i}d_{z,i} \\ d_{z,i} & 0 & -d_{x,i} & -d_{x,i}d_{y,i} & -d_{y,i}d_{z,i} & d_{x,i}^2 + d_{z,i}^2 \end{pmatrix}$$

and

$$\mathbf{M}^T\mathbf{Z} = \sum_{i=0}^{m} \begin{pmatrix} \Delta d_{x,i} \\ \Delta d_{y,i} \\ \Delta d_{z,i} \\ -d_{z,i} \cdot \Delta d_{y,i} + d_{y,i} \cdot \Delta d_{z,i} \\ -d_{y,i} \cdot \Delta d_{x,i} + d_{x,i} \cdot \Delta d_{y,i} \\ d_{z,i} \cdot \Delta d_{x,i} - d_{x,i} \cdot \Delta d_{z,i} \end{pmatrix}$$

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