from linearalgebra import vec

$$
\begin{aligned}
icf_i &= vec\left(c_i^{-1}\right) \\
qq1_i &= \left(icf_{i,1}, icf_{i,2}, icf_{i,3}\right) \\
qq2_i &= \left(icf_{i,5}, icf_{i,6}, icf_{i,9}\right) \\
qlin_i &= c_i^{-1} v_{i,*} \\
v\_out_i &= \begin{bmatrix} qq1_i{}^T \\ \left(qq1_{i,2}, qq2_{i,1}, qq2_{i,2}\right)^T \\ \left(qq1_{i,3}, qq2_{i,2}, qq2_{i,3}\right)^T \end{bmatrix}^{-1} qlin_i
\end{aligned}
$$

where

$$
\begin{aligned}
v &\in \mathbb{R}^{m \times 3} \\
f &\in \mathbb{Z}^{t \times 3} \\
c_i &\in \mathbb{R}^{3 \times 3} \\
n &\in \mathbb{Z}
\end{aligned}
$$