$$\begin{split} p_i &= poly_{l,*} \\ q_i &= poly_{l,*} \\ d_i &= p_i - q_i \\ H &= \sum_i \frac{1}{\|d_i\|_2} \begin{bmatrix} d_{i,2}^2 + d_{i,3}^2 & -d_{i,1} \cdot d_{i,2} & -d_{i,1} \cdot d_{i,3} \\ -d_{i,1} \cdot d_{i,2} & d_{i,1}^2 + d_{i,3}^2 & -d_{i,2} \cdot d_{i,3} \\ -d_{i,1} \cdot d_{i,3} & -d_{i,2} \cdot d_{i,3} & d_{i,1}^2 + d_{i,2}^2 \end{bmatrix} \\ \mathcal{I} &= \sum_i \frac{1}{\|d_i\|_2} \begin{bmatrix} -d_{i,2} \cdot p_{i,2} \cdot q_{i,1} - d_{i,3} \cdot p_{i,3} \cdot q_{i,1} + d_{i,2} \cdot p_{i,1} \cdot q_{i,2} + d_{i,3} \cdot p_{i,1} \cdot q_{i,3} \\ d_{i,1} \cdot p_{i,2} \cdot q_{i,1} - d_{i,1} \cdot p_{i,1} \cdot q_{i,2} - d_{i,3} \cdot p_{i,3} \cdot q_{i,2} + d_{i,3} \cdot p_{i,2} \cdot q_{i,3} \\ d_{i,1} \cdot p_{i,3} \cdot q_{i,1} + d_{i,2} \cdot p_{i,3} \cdot q_{i,2} - d_{i,1} \cdot p_{i,1} \cdot q_{i,3} - d_{i,2} \cdot p_{i,2} \cdot q_{i,3} \end{bmatrix} \end{split}$$

where

$$poly \in \mathbb{R}^{n \times 3}$$

 $poly 2 \in \mathbb{R}^{n \times 3}$