given

- $p_i \in \mathbb{R}^3$:points on lines
- $d_i \in \mathbb{R}^3$:unit directions along lines

$$P_i = (I_3 - d_i d_i^T)$$

$$q = (\sum_i P_i^T P_i)^{-1} (\sum_i P_i^T P_i p_i)$$