10/22/2018 CSE 252A Zhisheng Huang

P1

$$Q_1 = \begin{bmatrix} 7 \\ -3 \\ 1 \end{bmatrix} + t \begin{bmatrix} 8 \\ 2 \\ 4 \end{bmatrix} = \begin{bmatrix} 7+8t \\ -3+2t \\ 1+4t \end{bmatrix}, \quad Q_2 = \begin{bmatrix} 2 \\ -5 \\ 9 \end{bmatrix} + t \begin{bmatrix} 8 \\ 2 \\ 4 \end{bmatrix} = \begin{bmatrix} 2+8t \\ -5+2t \\ 9+4t \end{bmatrix}$$

the intersection of OQ_1 & OQ_2 with Π' are denoted as Q_1' & Q_2'

$$Q_1' = \begin{bmatrix} \frac{f'(7+8t)}{1+4t} \\ \frac{f'(-3+2t)}{1+4t} \\ f' \end{bmatrix} \qquad Q_2' = \begin{bmatrix} \frac{f'(2+8t)}{9+4t} \\ \frac{f'(-5+2t)}{9+4t} \\ f' \end{bmatrix}$$

at the coordinate system at C', we get

$$P_1 = \begin{bmatrix} \frac{f'(7+8t)}{1+4t} \\ \frac{f'(-3+2t)}{1+4t} \end{bmatrix} \qquad P_2 = \begin{bmatrix} \frac{f'(2+8t)}{9+4t} \\ \frac{f'(-5+2t)}{9+4t} \end{bmatrix}$$

For ray Q_1, end point is

$$\left(\frac{1}{3}f', \frac{5}{3}f' \right)$$

For ray Q_2, end point is

$$\left(-\frac{6}{5}f', -\frac{7}{5}f' \right)$$

Vaishing point:

$$(2f', 0.5f')$$