观测器

$$Q_g=\begin{bmatrix}1&1&0\\1&2&1\\1&4&4\end{bmatrix}\quad \text{rank}(Q_g)=3\quad \text{能观}$$

$$T=\begin{bmatrix}1&1&1\\-1&-1&0\\1&2&4\end{bmatrix}$$

$$\tilde{A}=\begin{bmatrix}0&0&4\\1&0&-8\\0&1&5\end{bmatrix}$$

$$\tilde{b}^T=\begin{bmatrix}3&-3&1\end{bmatrix}$$
$$\tilde{c}^T=\begin{bmatrix}0&0&1\end{bmatrix}$$

$$f^*(s)=(s+2)(s+3)(s+4)=s^3+9s^2+26s+24$$
$$f(s)=s^3-5s^2+8s-4$$
$$\tilde{M}=[-28\quad -18\quad -14]^T$$

观测器方程

$$\dot{\hat{x}}=(A+MC)\hat{x}+Bu-My$$