

Capacitance system

$$G(s) = \frac{1}{As}$$

$$s = j\omega$$

$$|G| = \frac{1}{A\omega}$$

$$\angle G = \frac{-\pi}{2}$$

$$\log|G| = \log A - \log \omega$$

St- line ,slope =-1

$$|G| = 1$$

$$0 = \log A - \log \omega$$

$$\omega = \frac{1}{A}$$

Two equal lags

$$G(s) = \frac{k}{(\tau s + 1)^2}$$

$$|G| = \frac{k}{\tau^2 \omega^2 + 1}$$

$$\angle G = -2 \tan^{-1} \omega \tau$$

$$\log|G| = \log k - \log(\tau^2 \omega^2 + 1)$$

$$\text{LFA } \log|G| = \log k$$

$$\text{HFA } \log|G| = -2 \log \tau - 2 \log \omega$$

Slope=-2

The interest $\log k = \log k - 2 \log \tau - 2 \log \omega$ at $\omega = \frac{1}{\tau}$

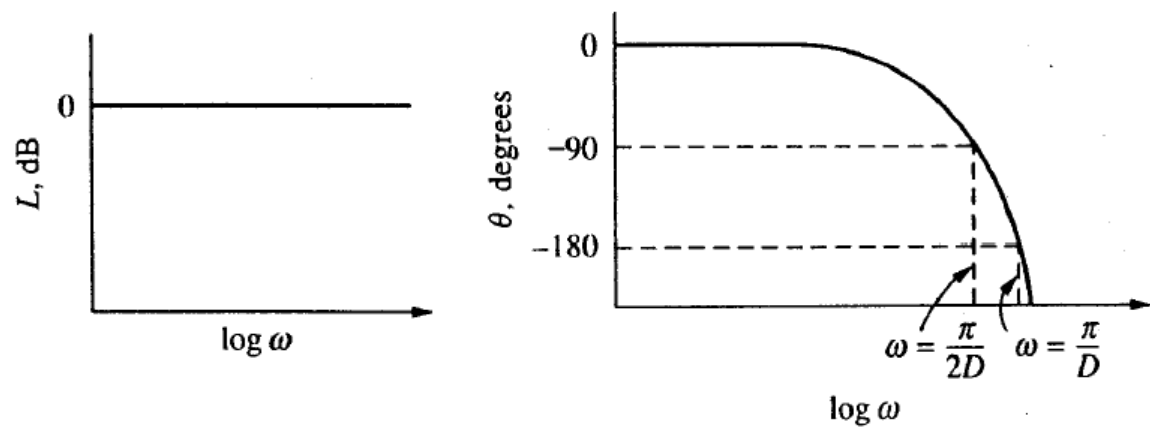


Fig.55 Bode plots for dead time, $D=\tau_D$