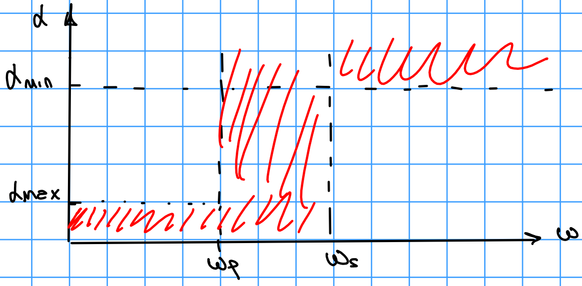


$\omega_p = 1k \ rad/s$

$\omega_s = 10k \ rad/s$

$\alpha \, min = 1 \, dB$

$\alpha \, max = 50 \, dB$

$\varepsilon^2 = 10^{\alpha max/10} - 1$

$\alpha(\omega s) = 10 \log(1 + \varepsilon^2 \omega_s^{2n})$

$\varepsilon^2 = 0{,}259$

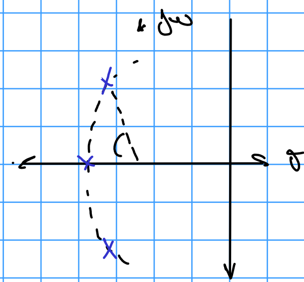
$n = 3$

$$|H(\omega)| = |H(j\omega)| \cdot |H(-j\omega)| \Big|_{\omega = \frac{s}{j}} = H(s) \cdot H(-s) = \frac{1}{1 + \varepsilon^2 \omega^{2n}}$$

$$= \frac{1}{1 + C_n^2(\omega)}$$

. Máxima planicidad $\rightarrow \varepsilon^2 \neq 1$

. $\omega b = \omega p \cdot \varepsilon^{-1/n}$ → Factor de desnormalización



$$H(s) = \frac{1}{(s+1)\left(s^2 + s \cdot 2\cos\frac{\pi}{3} + 1\right)}$$

$$H(s) = \frac{1}{s^3 + 2s^2 + 2s + 1}$$

. Método sistemático para máxima planicidad y para Cheby

$$|H(j\omega)|^2 \Big|_{\omega = \frac{s}{j}} = \frac{1}{1 + \varepsilon^2 \omega^{2 \cdot 3}} = H(s) \cdot H(-s)$$

$$= \frac{1}{1 - \varepsilon^2 s^6} = \frac{1}{s^3 A + s^2 B + sC + D} \cdot \frac{1}{-s^3 A + s^2 B - sC + D}$$

$-a^2 = -\varepsilon^2 \Rightarrow a = \varepsilon$

$1 = D^2 \Rightarrow D = 1$

$0 = AB - BA = A.B = B.A$

$0 = A.D - DA - BC + BC$ } impares

$0 = C.D - DC$

$0 = -A.C - A.C + B^2 \Rightarrow B^2 = 2.A.C$

$0 = BD + DB - C^2 \Rightarrow C^2 = 2B.D$

$B^2 = 2\varepsilon\sqrt{2B.D}$, $D = 1$

$B^4 = 4\varepsilon^2 . 2.B$

$B = \sqrt[3]{8\varepsilon^2} = 2\varepsilon^{2/3}$

$C = \sqrt{2B} = \sqrt{4.\varepsilon^{2/3}} \rightarrow C = 2\varepsilon^{1/3}$

$$H(s) = \frac{1}{s^3 \varepsilon + s^2 2 . \varepsilon^{2/3} + 1}$$

- Valores de componentes
- Desnormalizar a ωp