

Bode Form of the Transfer Function

Bode form of $KG(s)$ is a factored form with the constant term in each factor equal to 1, i.e., lump all DC gains into one number in the front.

Example:

$$\begin{aligned} KG(s) &= K \frac{s + 3}{s(s^2 + 2s + 4)} \\ \text{rewrite as } & \frac{3K \left(\frac{s}{3} + 1\right)}{4s \left(\left(\frac{s}{2}\right)^2 + \frac{s}{2} + 1\right)} \Big|_{s=j\omega} \\ &= \underbrace{3K}_{=K_0} \frac{\frac{j\omega}{3} + 1}{j\omega \left(\left(\frac{j\omega}{2}\right)^2 + \frac{j\omega}{2} + 1\right)} \end{aligned}$$