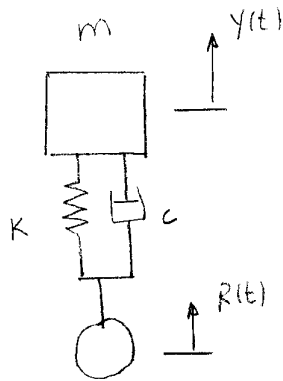


Car Model

$$H_y(s) = \frac{Y(s)}{R(s)} = \frac{cs + K}{ms^2 + cs + K}$$

$$H_a(s) = s^2 H_y(s) = \frac{s^2 (cs + K)}{ms^2 + cs + K}$$

$$G_a(\omega) = H_a(j\omega) = \frac{-\omega^2 (j\omega + K)}{(K - m\omega^2) + j\omega c}$$

$$\omega \ll \omega_n, \quad |G_a(\omega)| \sim \omega^2$$

$$\omega \approx \omega_n, \quad |G_a(\omega)| \rightarrow \text{Resonance peak}$$

$$\omega \gg \omega_n, \quad |G_a(\omega)| \sim \frac{\omega^3 c}{m\omega^2} = \frac{c}{m} \omega$$

