$$P_{tap} = -\frac{dE}{dt}$$

$$Q = 2\pi \frac{E}{E_{tap}/T} \Rightarrow E_{tap}/T = \frac{2\pi E}{Q}$$

$$P_{tap} \cdot T = E_{tap}/T$$

$$\frac{dE}{dt} \simeq -\frac{2\pi}{T}\frac{1}{Q} \cdot E = -\frac{\omega_0}{Q} \cdot E$$

$$\boxed{E(t) = E_0 e^{-\frac{\omega_0}{Q} t}} = E_0 e^{-\frac{t}{\Delta t}} \qquad \Delta t = \frac{Q}{\omega_0}$$

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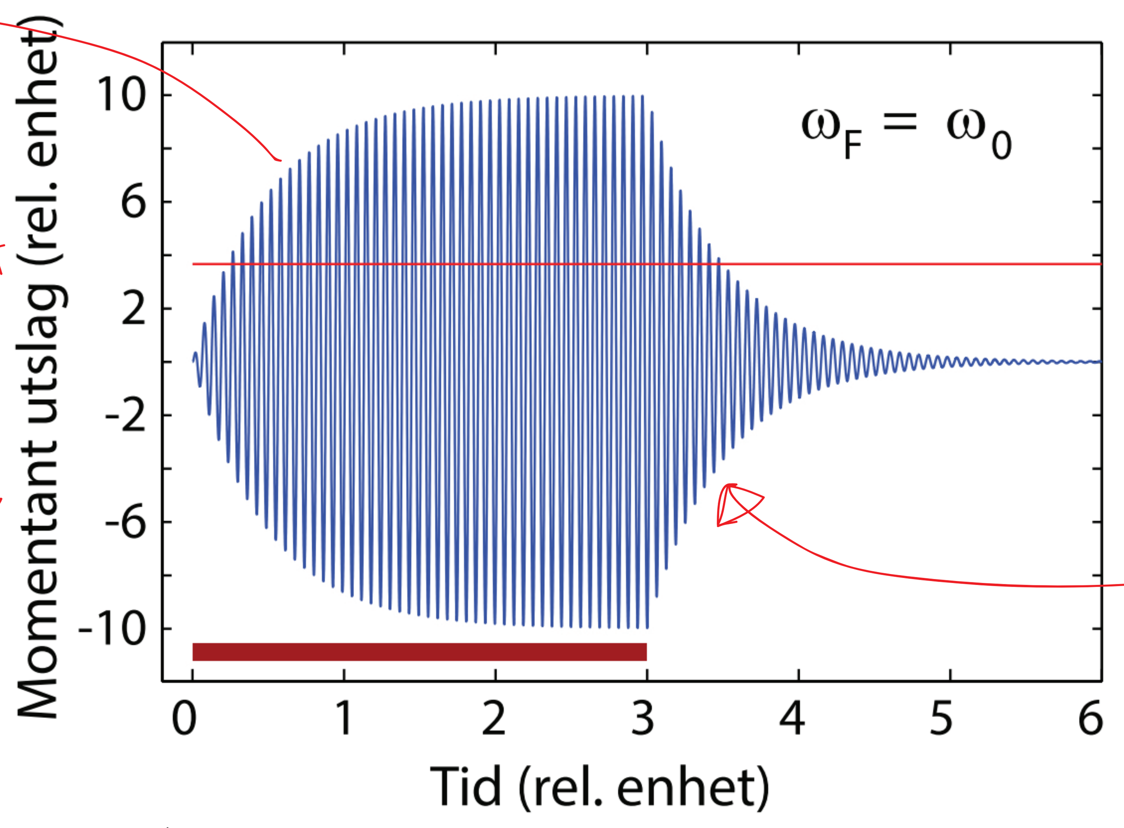
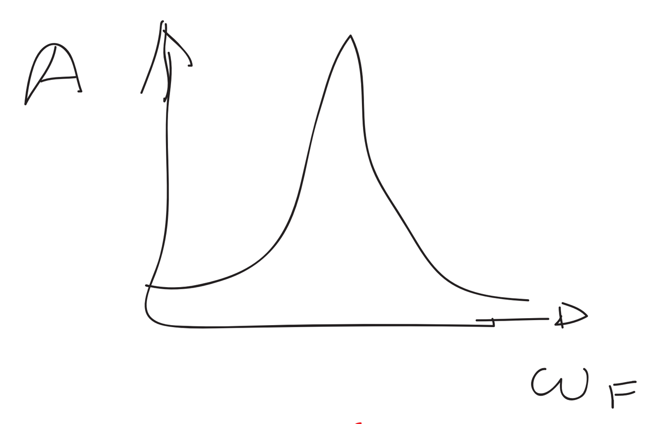
innsvingnings-forløp

tidskonstant $\Delta t = \frac{Q}{\omega_0}$



(avklinging decay)



(1) Høy Q ⇒ Skarp frekvensrespons

(2) Høy Q ⇒ Tar lang tid å endre systemets svingninger.

$$\Delta t = \frac{Q}{\omega_0}$$

$$\Delta\omega = \frac{\omega_0}{Q}$$

$$\Delta f = \frac{f_0}{Q}$$

$$Q = \frac{\omega_0}{\Delta\omega}$$

$$\boxed{\Delta t \cdot \Delta f \approx \frac{1}{2\pi}}$$

| h (Plancks konst)

$$\Delta t \cdot \Delta(hf) \simeq \frac{h}{2\pi}$$

$$\Delta t \cdot \Delta E \simeq \frac{h}{2\pi}$$

Analogi til Heisenbergs uskarphetsf.