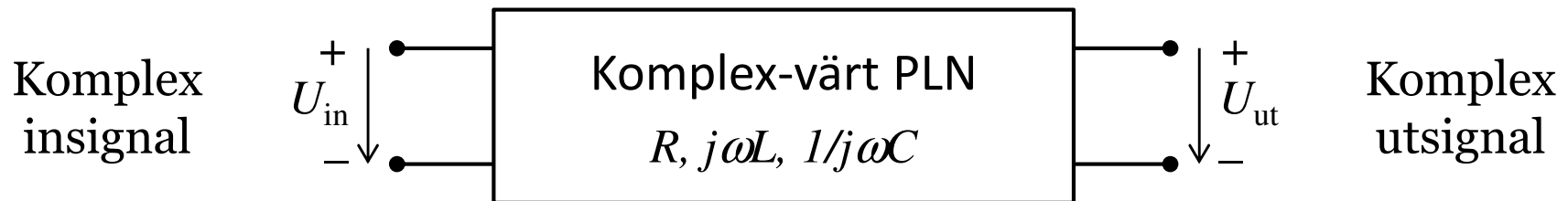


Passiva filter – Introduktion

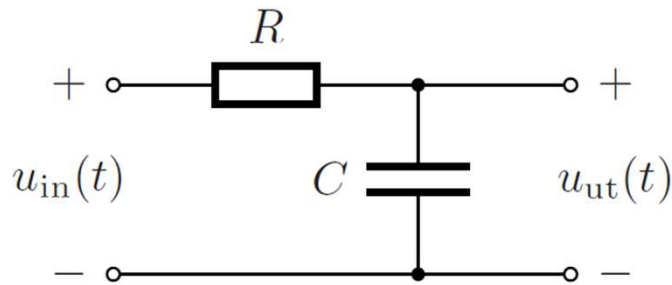


Samband: $U_{ut} = \underline{H(\omega)} U_{in}$ $H(\omega) = \underline{|H(\omega)|} \cdot e^{\underline{j \arg\{H(\omega)\}}} = U_{ut}/U_{in}$

↑
↑
↑

Frekvensfunktion
Amplitudkaraktäristik
Faskaraktäristik

Passiva filter – Exempel 1(2)



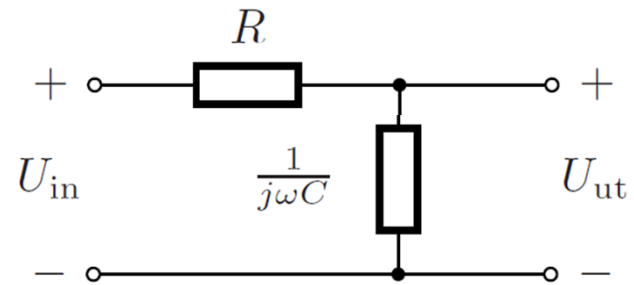
Spänningsdelning ger

$$U_{\text{ut}} = \frac{\frac{1}{j\omega C}}{\frac{1}{j\omega C} + R} U_{\text{in}} = \frac{1}{1 + j\omega RC} U_{\text{in}}$$

Frekvensfunktion

$$H(\omega) = \frac{1}{1 + j\omega RC}$$

$j\omega$
 $\Rightarrow$



Amplitudkaraktistik

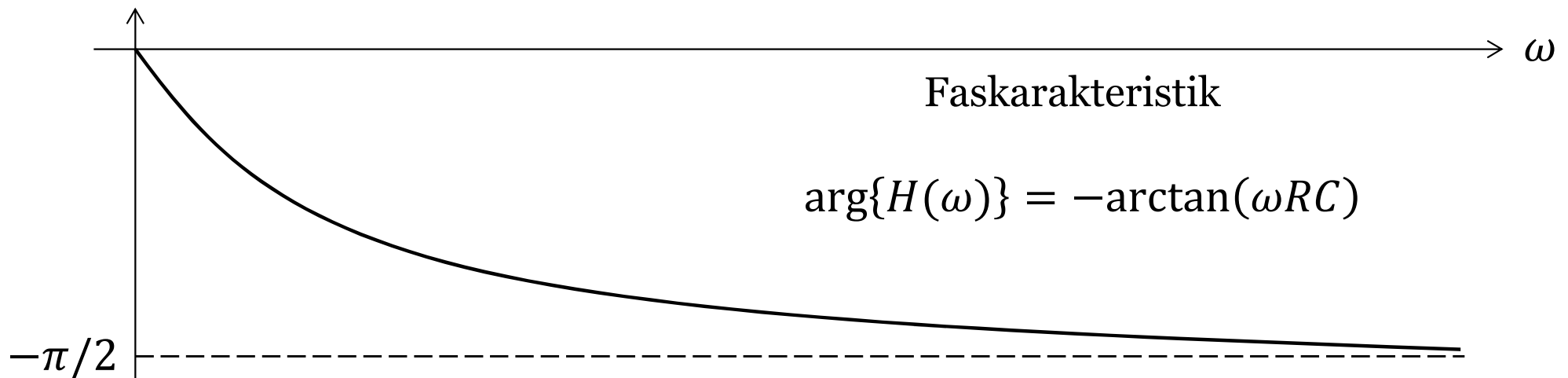
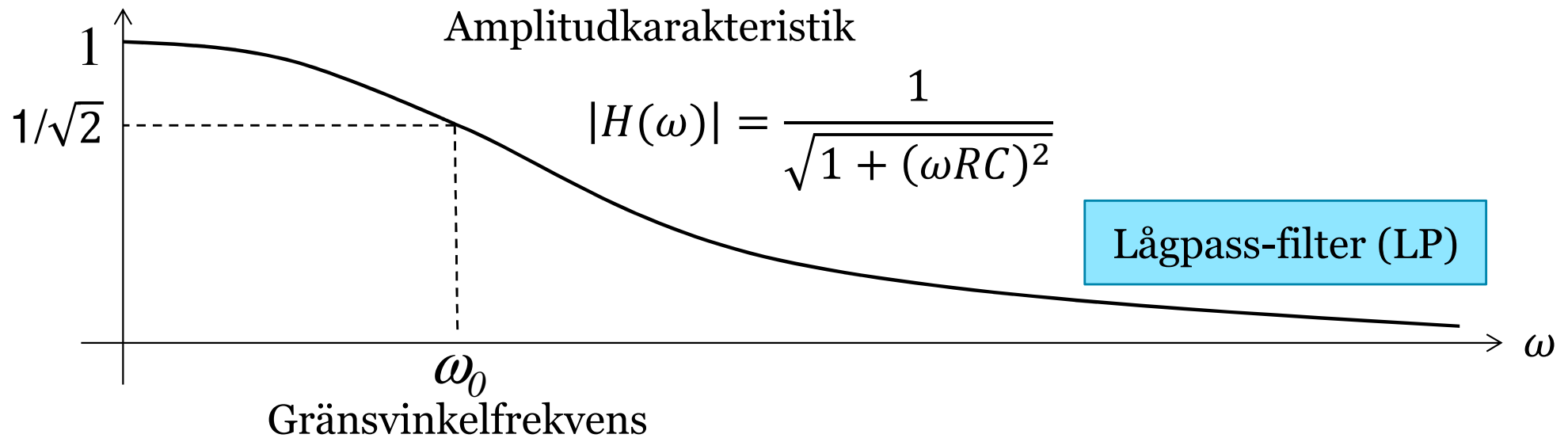
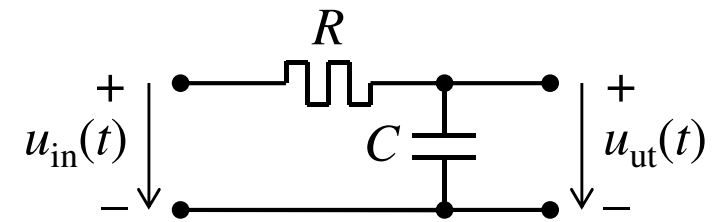
$$|H(\omega)| = \frac{1}{\sqrt{1 + (\omega RC)^2}}$$

Faskarakteristik

$$\arg\{H(\omega)\} = -\arctan(\omega RC)$$

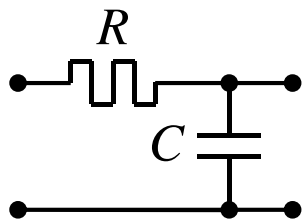
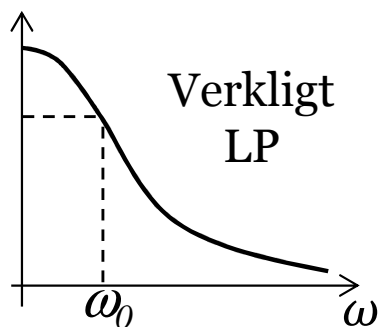
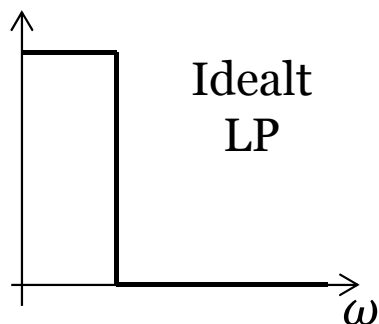
$$u_{\text{in}}(t) = \hat{U}_{\text{in}} \sin(\omega t + \varphi) \quad \Rightarrow \quad u_{\text{ut}}(t) = \hat{U}_{\text{in}} |H(\omega)| \sin(\omega t + \varphi + \arg\{H(\omega)\})$$

Passiva filter – Exempel 2(2)

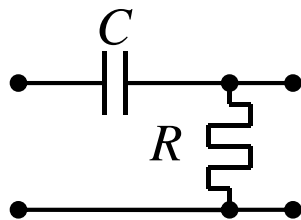
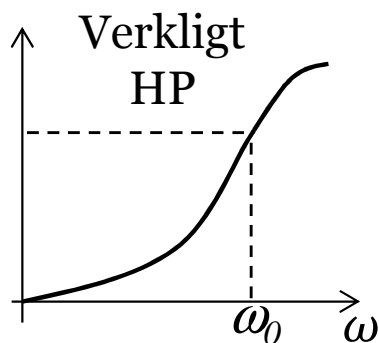
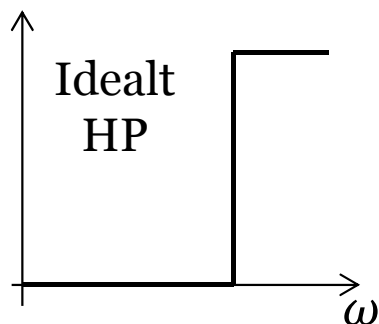


Olika frekvensselektiva filter

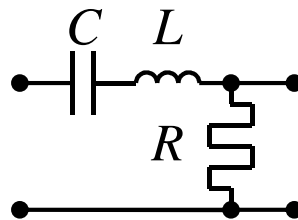
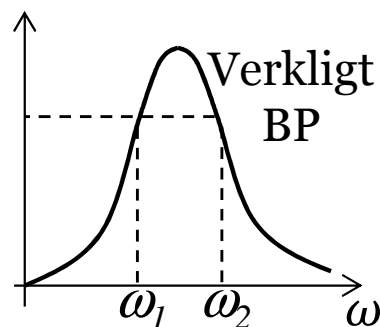
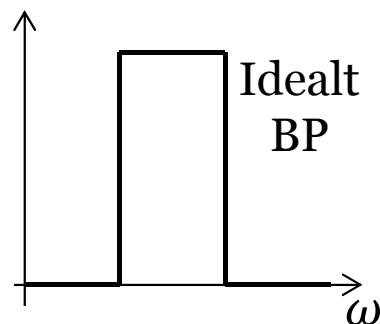
Lågpas (LP)



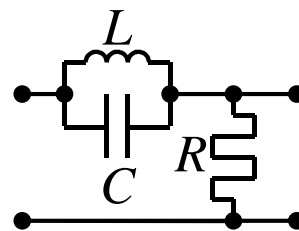
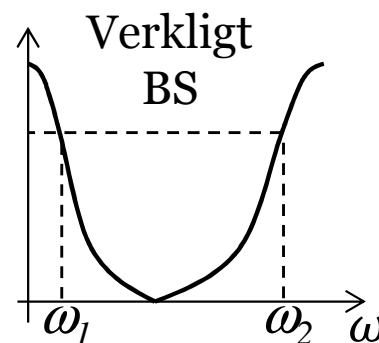
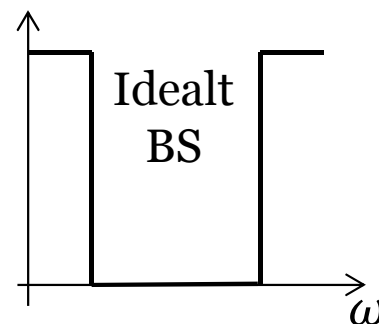
Högpas (HP)



Bandpass (BP)



Bandspärr (BS)



Allpass (AP)

