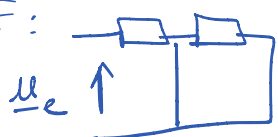


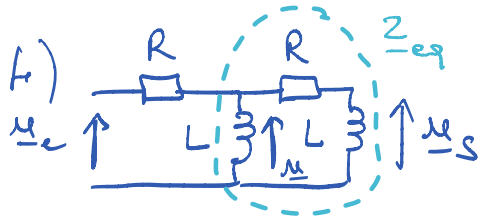
Filtre ADSL

1) $f(\text{signaux informatiques}) > f(\text{signaux téléphoniques})$

→ passe-haut

2) Il faut $4 \text{ kHz} < f_c < 25 \text{ kHz}$ → $f_c = 15 \text{ kHz}$ par exemple

3) BF:  $\rightarrow$ passe-haut



$$\underline{H} = \frac{\underline{u}_s}{\underline{u}_e} = \frac{\underline{u}_s}{\underline{u}} \times \frac{\underline{u}}{\underline{u}_e}$$

$$\frac{jL\omega}{R+jL\omega}$$

$$\underline{Z}_{eq} = \frac{(R+jL\omega)jL\omega}{R+jL\omega}$$

$$= \frac{1}{1+R \left(\frac{R+2jL\omega}{jL\omega(R+jL\omega)} \right)}$$

$$\underline{H} = \frac{jL\omega}{R+jL\omega} \times \frac{1}{1+R \left(\frac{R+2jL\omega}{jL\omega(R+jL\omega)} \right)}$$

$$\underline{H} = \frac{jL\omega}{R+jL\omega + R \left(\frac{R}{jL\omega} + 2R \right)} = \frac{jL\omega}{3R+jL\omega + \frac{R^2}{jL\omega}} = \frac{-\left(\frac{L\omega}{R}\right)^2}{1 - \left(\frac{L\omega}{R}\right)^2 + 2j\frac{L\omega}{R}}$$

On identifie $\omega_0 = \frac{R}{L}$

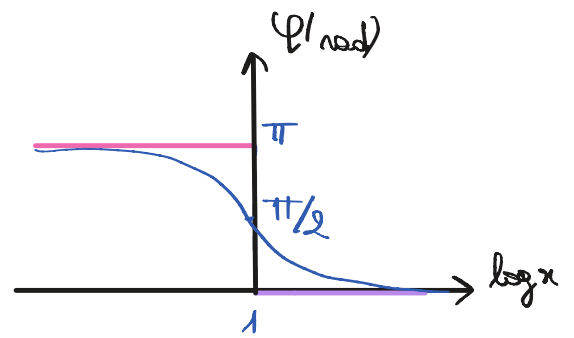
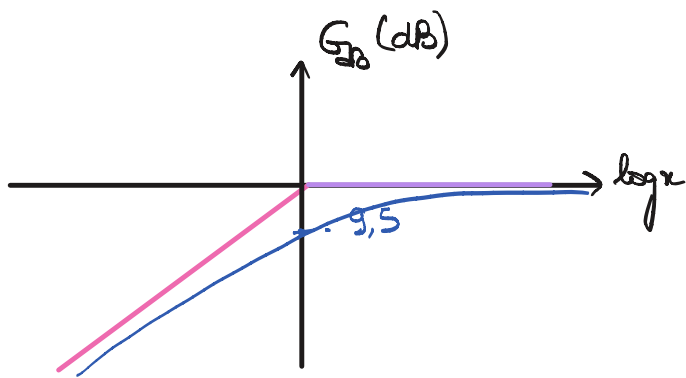
5) .TBF: $\underline{H} \rightarrow \frac{-x^2}{1}$

$G_B - 20 \log(n^2) = 40 \log n$ ← 40 dB/décade

$\varphi \rightarrow \arg(-x^2) = \pi$
↑ réel < 0

.THF: $\underline{H} \rightarrow \frac{-x^2}{-x^2} = 1$

$G_B - 0 \text{ dB}$ asymptote horizontale
 $\varphi \rightarrow 0$



6) $x=1$ $H = j \frac{1}{3}$ $G_{20} = 20 \log \frac{1}{3} = -9,5 \text{ dB}$