

merci de rédiger sur une feuille blanche.

10 minutes!

TD 3: AD 1:

Ley
Troylen
Gnp 8

1)	Tacq	N	T _e ms	f _e	T ₀	f ₀	f _s	Δf	Tacq = (N-1) × T _e
cas 1	1ms	21	$\frac{T_{acq}}{N-1} = 50 \times 10^{-3}$ Hz	20×10^4 Hz	1ms	10^3 Hz	10^3 Hz	10^3 Hz 0.5 kHz	$T_e = \frac{1}{60}$ $T_0 = \frac{1}{f_0}$
cas 2	10ms	21	0.5ms	2×10^3 Hz	1ms	10^3 Hz	0	10^2 Hz 100 Hz	$\Delta f = \frac{60}{N-1}$
cas 3	10ms	10	1.1ms	909 Hz	1ms	10^3 Hz	10^2 Hz	10^3 Hz	

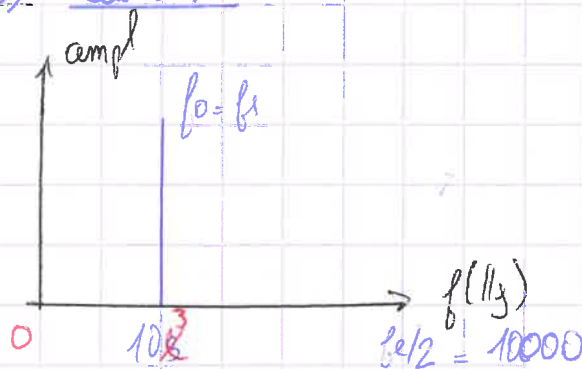
2) Critère de Shannon: $f_e > 2f_{max}$

• cas 1: $20 \times 10^3 \gg 2 \times 10^3 = 2f_0 \rightarrow$ critère respecté

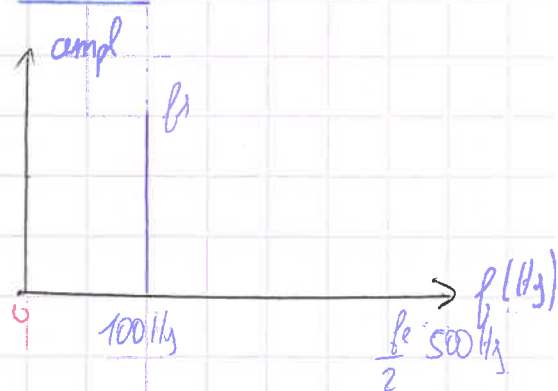
• cas 2: $2 \times 10^3 = 2f_0$ critère non respecté

• cas 3: $10^3 = f_0$ critère non respecté

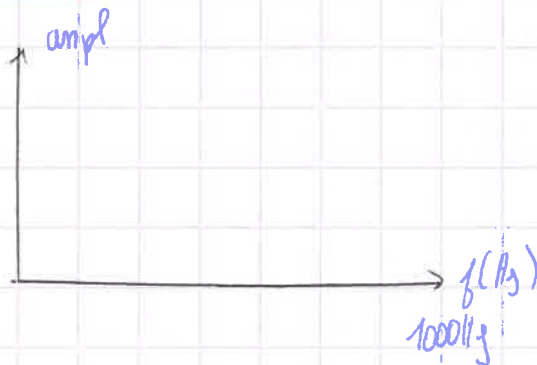
3) cas 1:



cas 3:



cas 2:



4) La fréquence d'échantillonnage minimale est: pour le cas 3.

$$f_e > 2f_0 \Leftrightarrow f_e > 2 \cdot 10^3 \text{ Hz}$$

5) cas 1: $T_{acq} \times \Delta f \Leftrightarrow 10^{-3} \times 10^3 = 1$

cas 2: $10 \times 10^{-2} \times 10^2 = 1$

cas 3: $10 \times 10^{-3} \times 10^3 = 1$

$$\Rightarrow T_{acq} \times \Delta f = 1$$