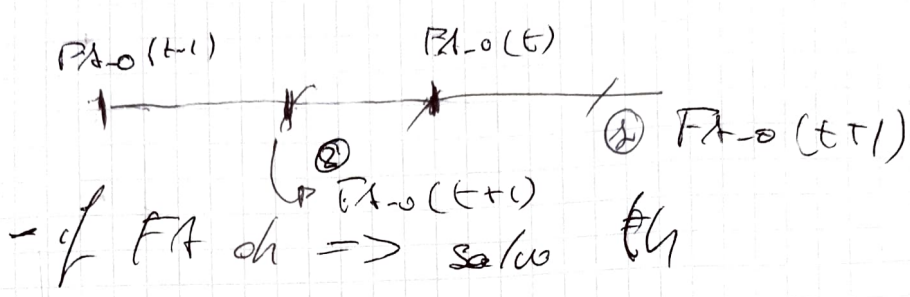


$$\overline{x} \rightarrow x$$

$$R_x \rightarrow \text{argu}(X, \text{SNR})$$

$$[\text{SNR}_1, \text{SNR}_2, \text{SNR}_3]$$

$\text{FA_threshold} > f \Rightarrow$ ~~reject~~ ~~the~~ ~~signal~~ ~~the~~
 $\text{FA_threshold} < f \Rightarrow$ ~~accept~~ ~~the~~ ~~signal~~ ~~the~~



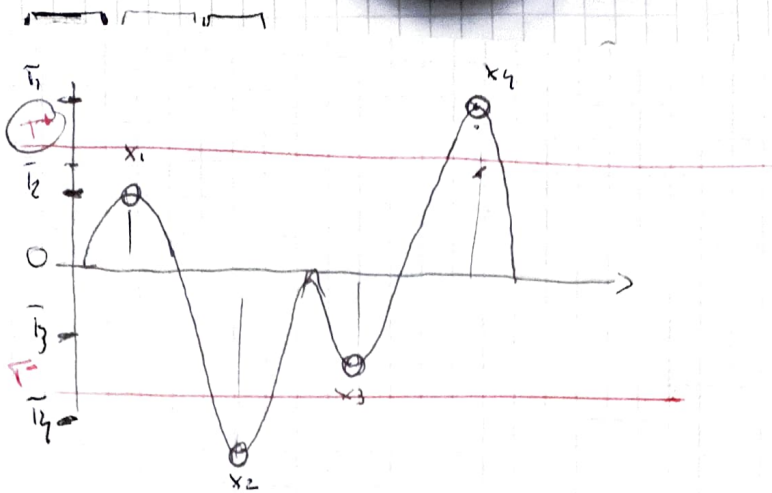
for

for

for

for T in $\{t_h\}$

for $i \dots N$

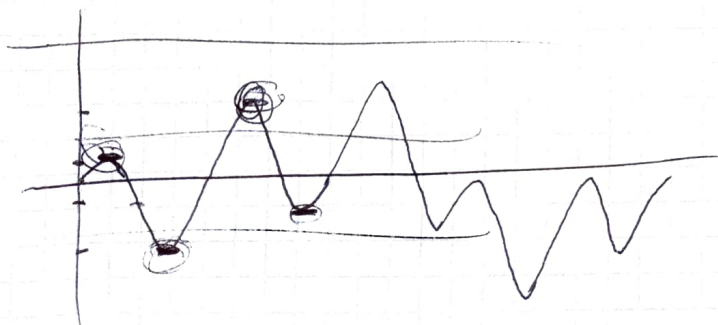
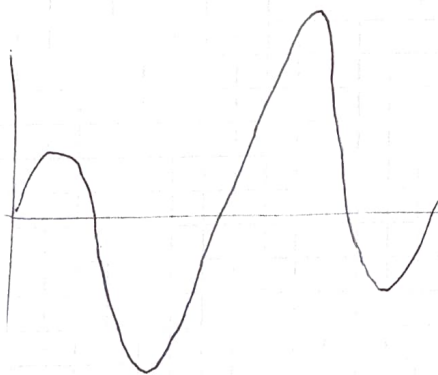


bit Data: $\begin{cases} 0 & \text{if } x_i < 0 \\ 1 & \text{if } x_i > 0 \end{cases}$

bit A_{ch}: $\begin{cases} 0 & \text{if: } \begin{cases} \text{bit Data} = 1 & \text{if } x_i = \overline{1_2} \\ \text{bit Data} = 0 & \text{if } x_i = \overline{1_3} \end{cases} \\ 1 & \text{if: } \begin{cases} \text{bit Data} = 1 & \text{if } x_i = \overline{1_1} \\ \text{bit Data} = 0 & \text{if } x_i = \overline{1_3} \end{cases} \end{cases}$

$x_i \in \overline{1_2}$
 $x_i \in \overline{1_3}$

Se non decodimento potremo $\frac{1}{1} = A(\text{data} = 1)$
 $\frac{1}{1} = A(\text{data} = 0)$



$$\overline{x} \rightarrow x$$

$$\begin{array}{|c|c|c|c|} \hline 10 & 100 & 101 & \\ \hline 110 & 10000 & 1 & \\ \hline \end{array}$$

$$C \begin{pmatrix} 0 & 10 \\ 0 & 1 \end{pmatrix} =$$

h + w

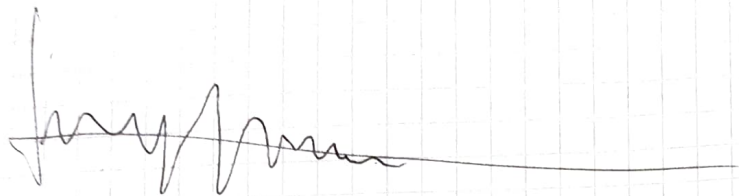
$$y = (h \cdot x) + w$$

$$(h) \cdot y$$

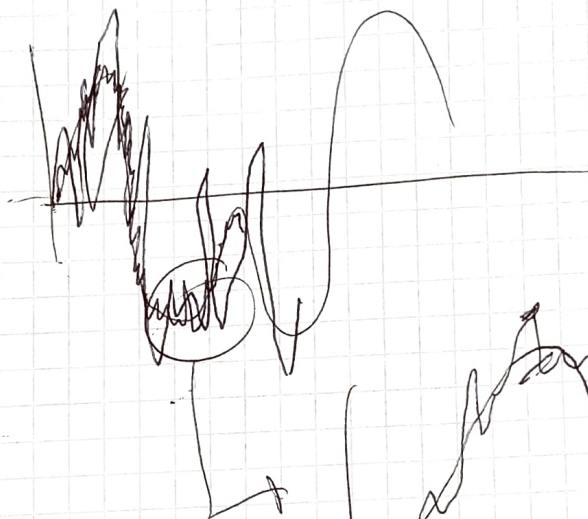
$$h \cdot h^{-1} = \frac{h \cdot h^{-1}}{1} = 1 \cdot \frac{1}{1} = 1$$

$$y \rightarrow y \cdot h^{-1} = h^{-1} \cdot x \cdot h^{-1}$$

$$\frac{1}{5} \text{ bit}$$

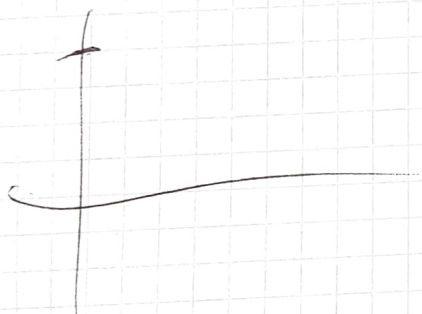


$$SNR = \frac{P_s}{P_n}$$

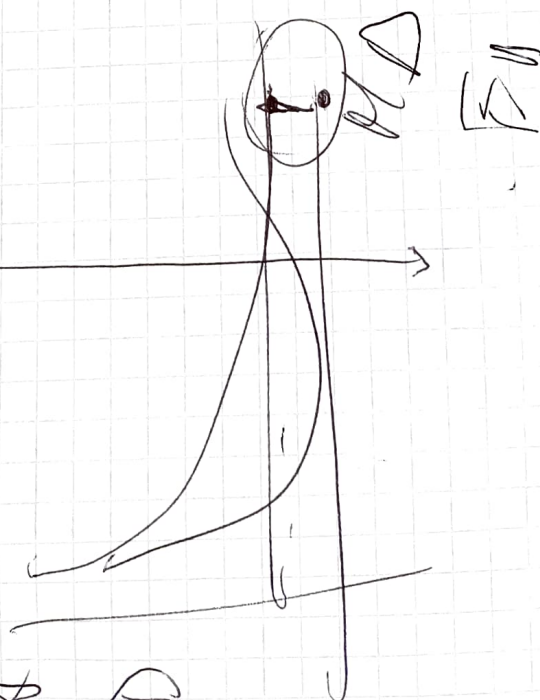


$$\frac{1}{5} \text{ bit}$$

15%



$$\begin{array}{c} s_1^+ \\ s_2^+ \\ s_1^- \\ s_2^- \end{array}$$



$$Tx \rightarrow X$$

- ① Calcolo BER dato un messaggio fisso variando distanze $Tx-Rx$ 15-150
- ② Ripeto punto ① 10 volte variando messaggio inviato
lo ottengo statistica del BER in base alla distanza $Tx-Rx$

$$A_1 = 20 \text{ dB} \rightarrow \begin{matrix} \uparrow \\ P \end{matrix} \times \text{dati}$$

$$A_2 = 10 \text{ dB} \rightarrow \begin{matrix} \uparrow \\ P \end{matrix} \times \text{autb.}$$

$$X_1 = [\dots]$$

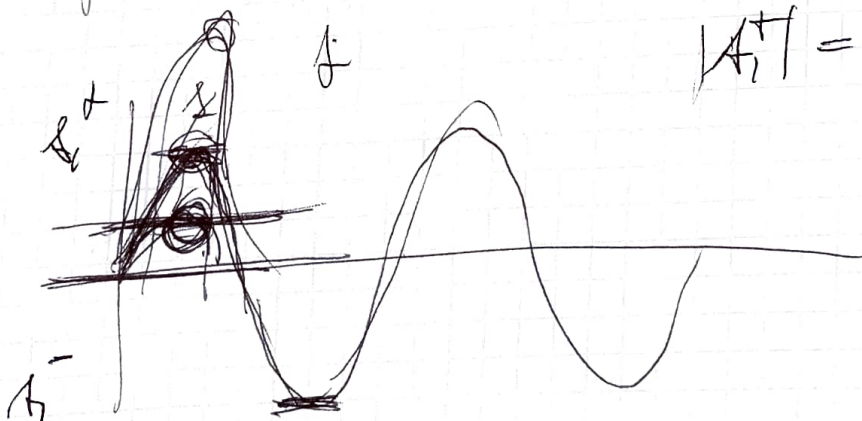
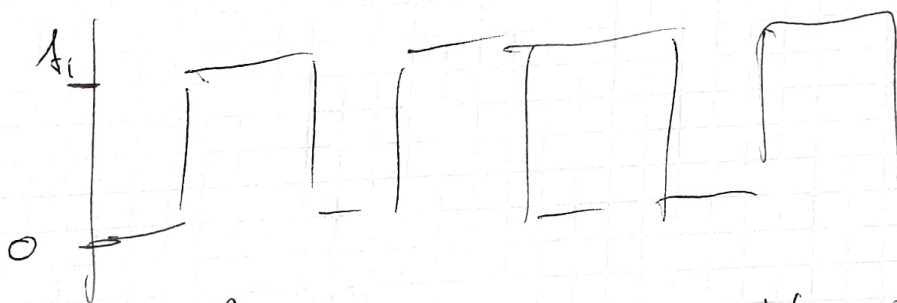
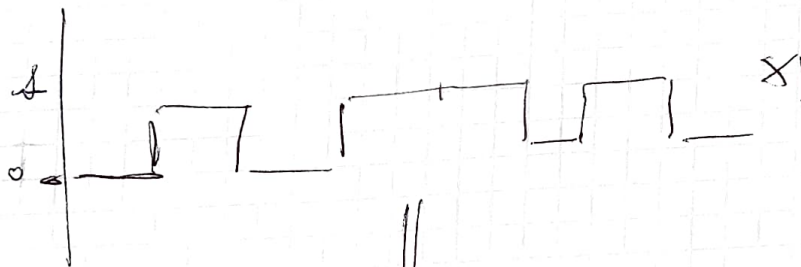
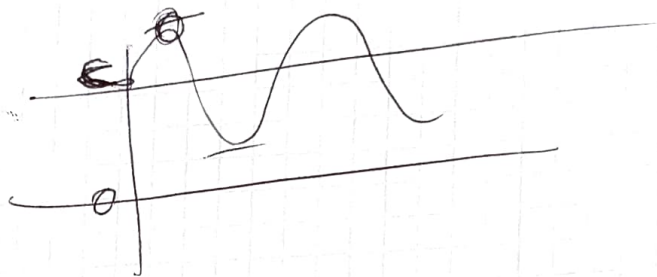
$$X_2 = [\dots]$$

$$S_1 = X_1 \cdot A_1$$

$$S_2 = X_2 \cdot A_2$$

$$S = S_1 + S_2$$

$$\begin{matrix} \text{dato} \\ \text{actb.} \end{matrix} \rightarrow \begin{cases} 1 \rightarrow + \\ 0 \rightarrow - \end{cases}$$



$$|A^+| = |A^-|$$