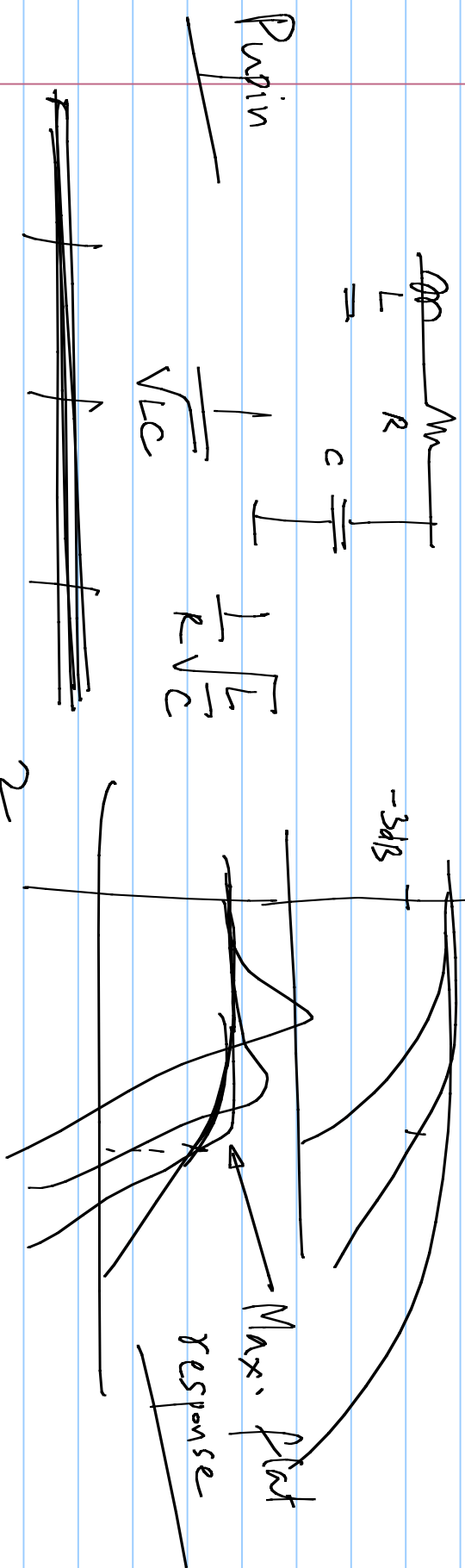


Intersymbol interference (ISI)



Delay $\propto L$

~~Delay $\propto L$~~

Delay $\propto L$

$$BW > \alpha \cdot f_s$$

$$> 75\% \cdot f_s$$

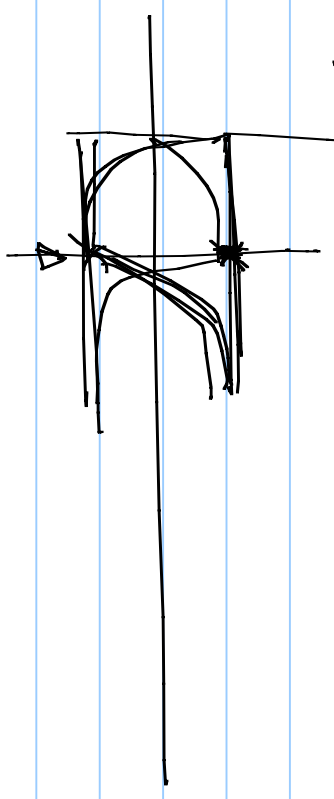
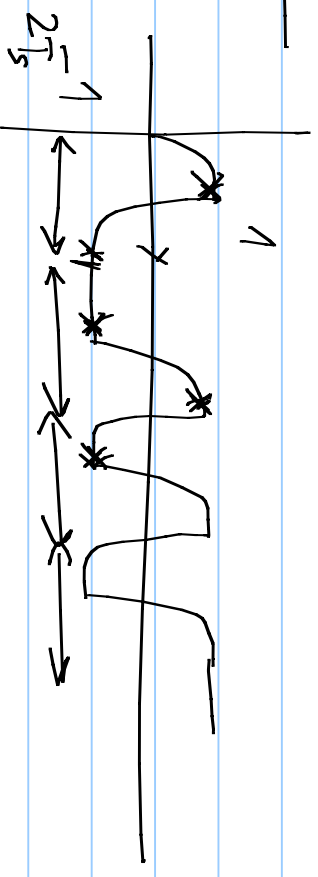
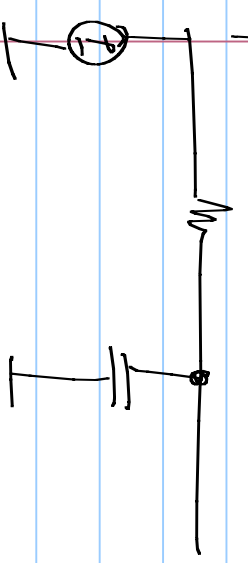
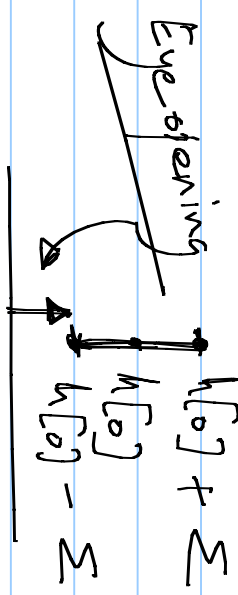
Channel + transmitter response

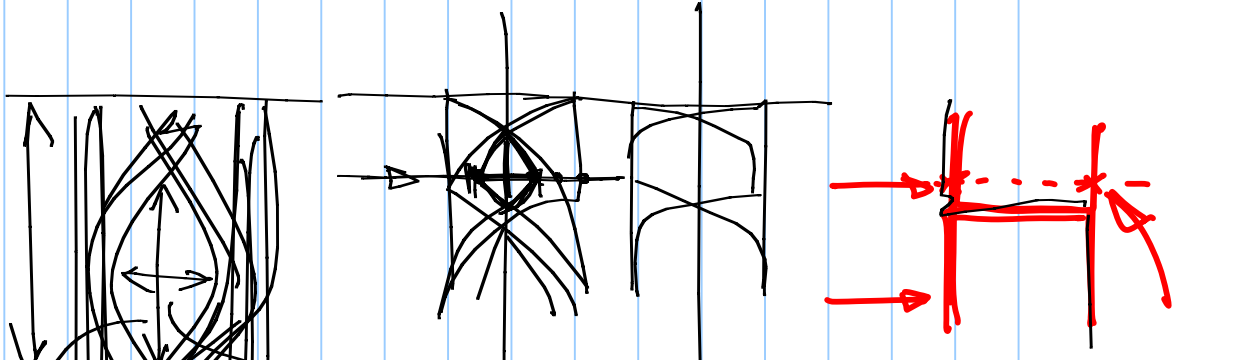
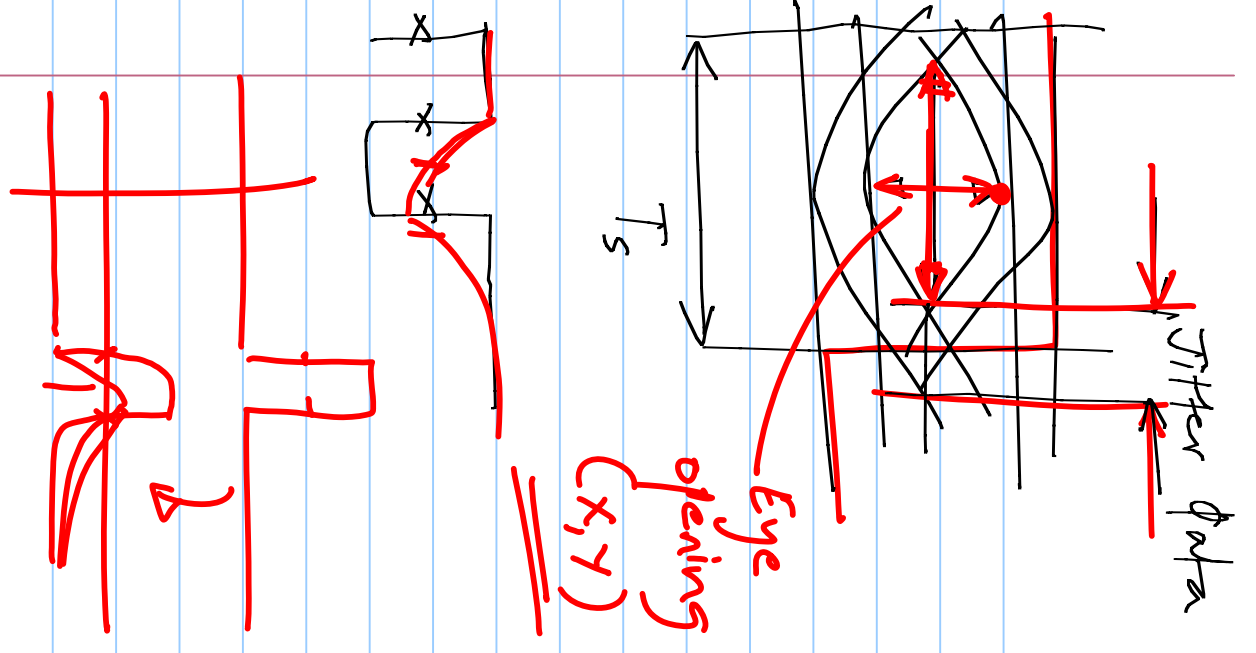
$$h[n]$$

$$* \text{Max } |s| : \sum_{n \neq 0} |h[n]|$$

$$\text{Worst case signal } \sqrt{h[0]^2 - \sum_{n \neq 0} |h[n]|^2}$$

$$\checkmark < h[0]$$





$$h[n] \pm \sum_{n \neq 0} |h[n]|$$

* Additive noise - displacement in Y
 \Rightarrow BER
 * Jitter in the sampling clock - displacement in X \Rightarrow BER

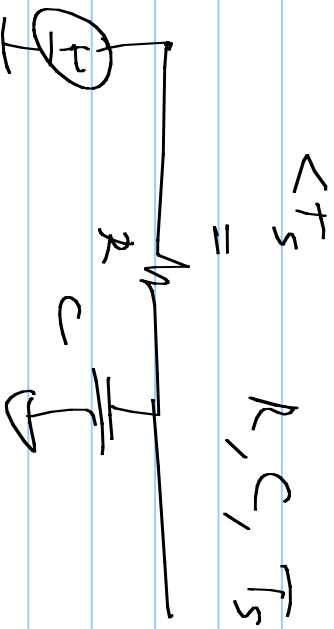
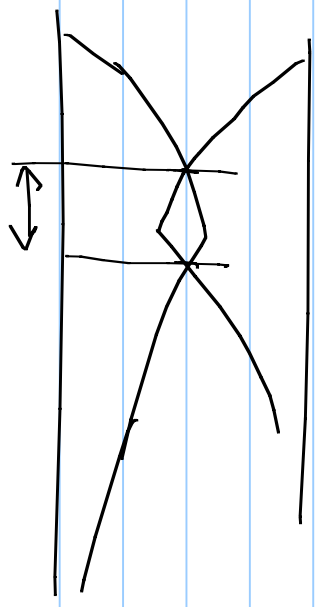
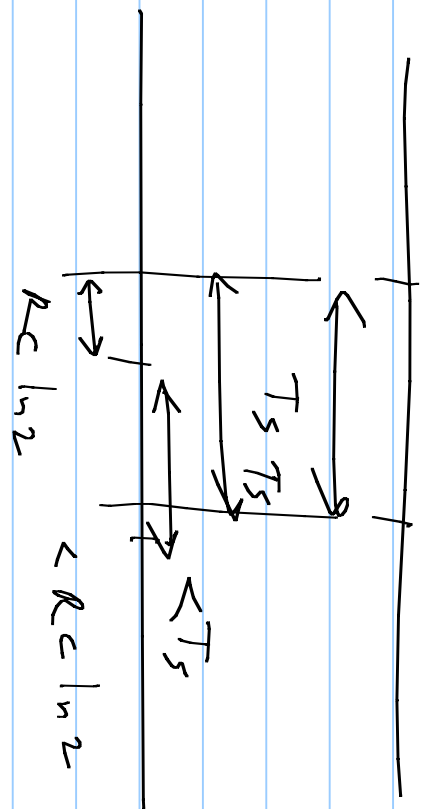
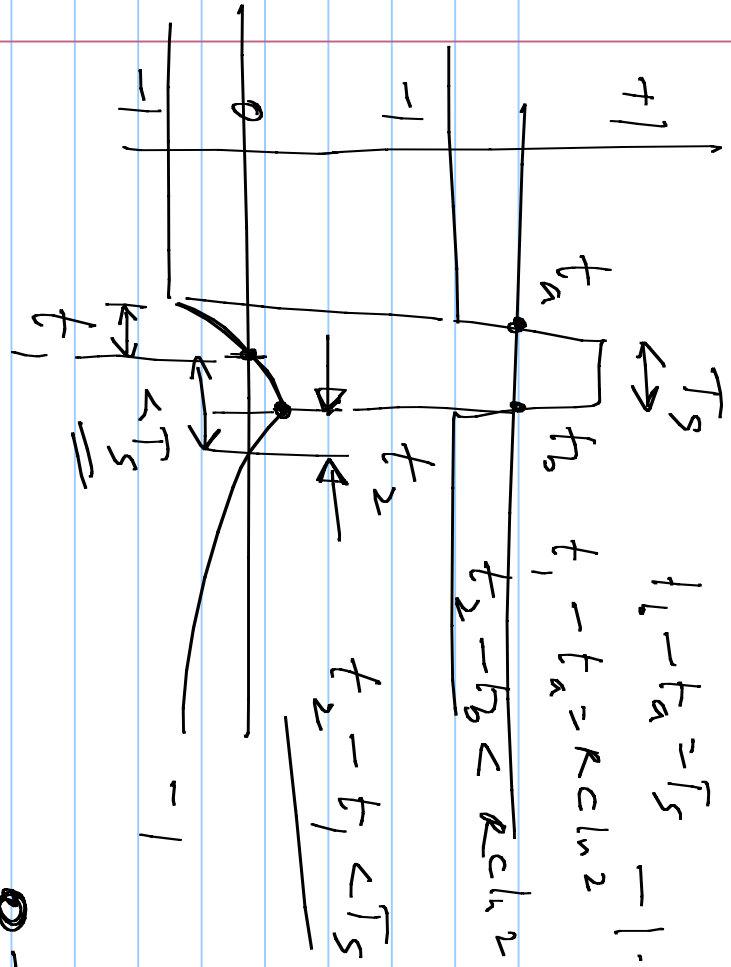
Vertical eye openings
 Horizontal eye openings

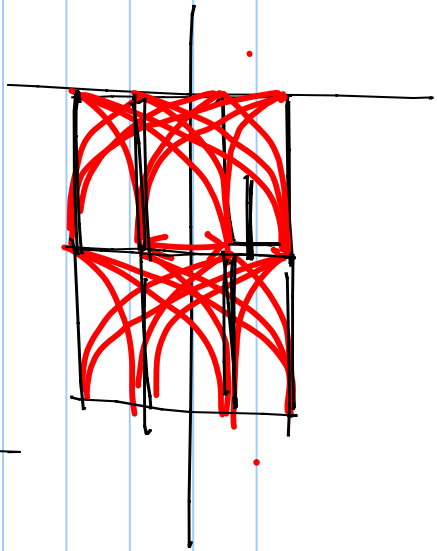
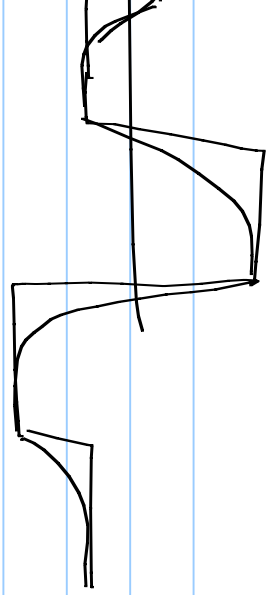
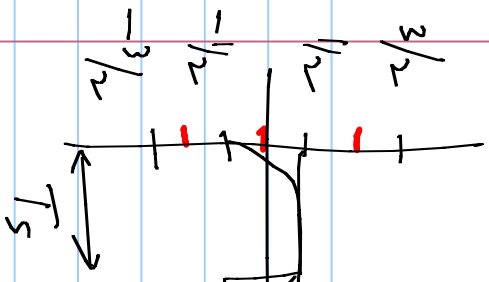
$$1 - t_a = T_s \quad -1 \cdot e^{-t/Rc} + 1 - e^{-t/Rc} = 0$$

$$e^{-t/Rc} = 1/2$$

$$t = Rc \ln(2)$$

$$t_2 < Rc \ln(2)$$





Eye diagram

$$\sum_{n \neq 0} |h[n]|$$

$$\frac{1}{2} \times [0] h[0] + \frac{1}{2} \times [1] \times [1] + \dots$$

$+1/2$

