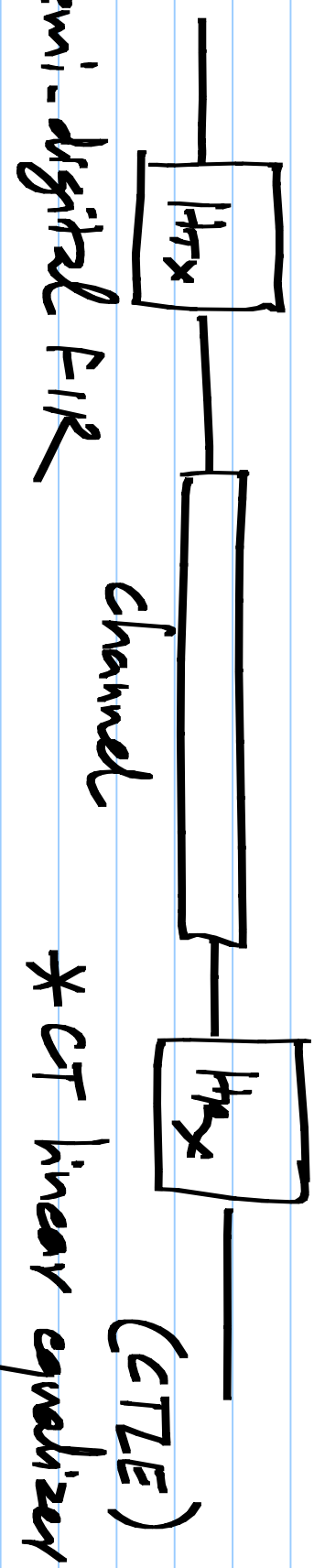


EE6322

Linear equalization

3/4/2018



* Semi-digital FIR

* Better controlled response

* If TX output is voltage

- limited, dc gain has

to be reduced as eq.

tap weights increase

* CT linear equalizer

* Simple zero/pole

→ h.f boost

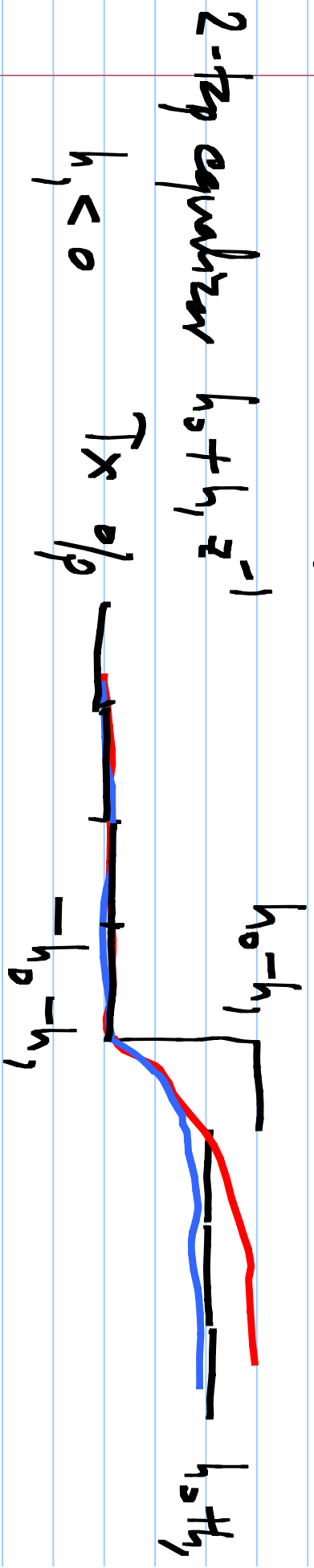
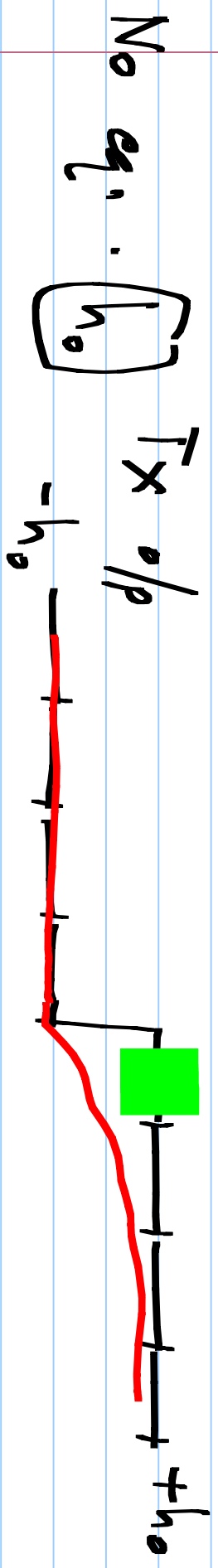
* Independent of SNR

* can have gain

* Ampifiers HF noise & crosstalk

$$H_{TX}(z) = h_{-1}z^{-1} + h_0 + h_1z + h_2z^2 \quad |h_0 \neq h_1| < h_0$$

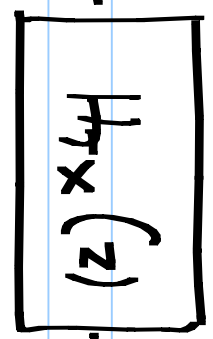
For a low pass channel, h_{-1}, h_1, h_2 in the equalizer have negative values.



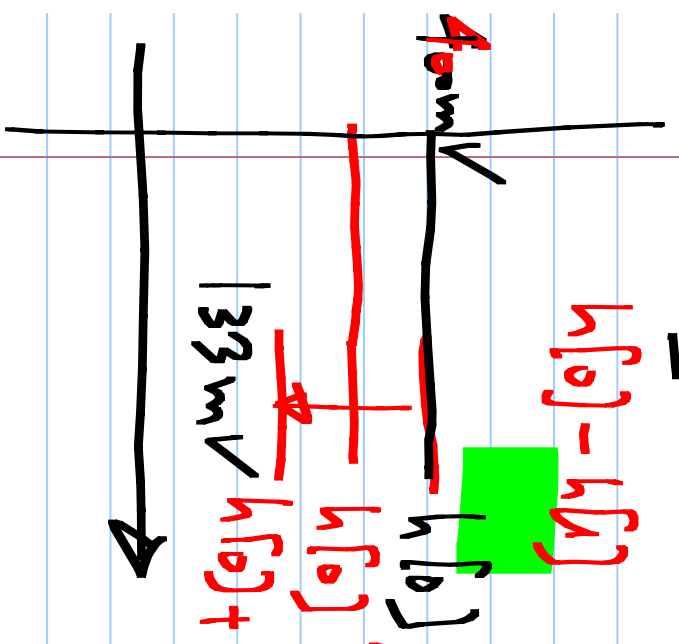
$$h[0] = \frac{40\text{mV}}{1.5} \text{ bits}$$

$h[1] = 133$ Tx o/p values

$$\sim 267\text{mV} \pm 1$$



$$y[n] = \sum_k h[k] x[n-k]$$



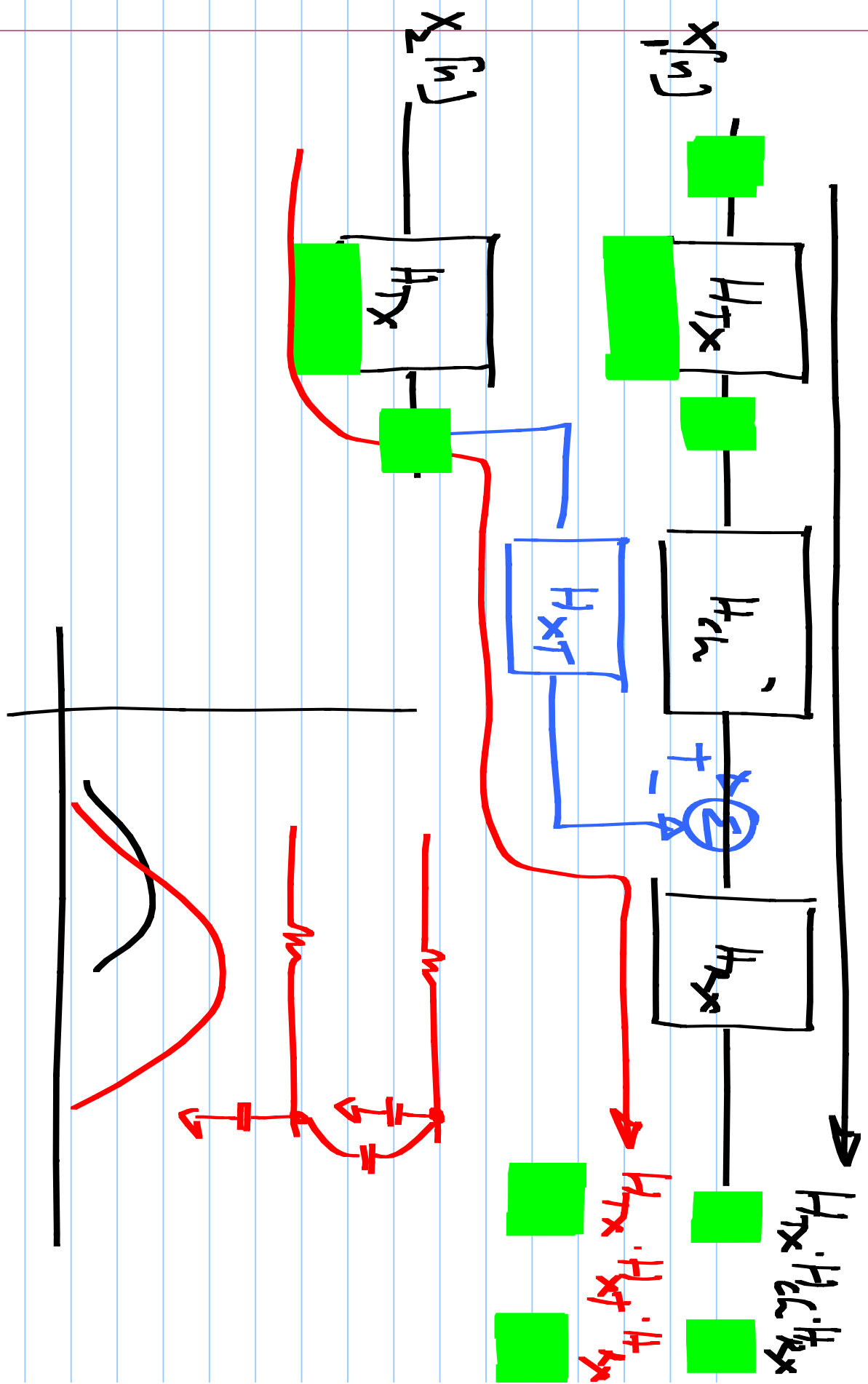
$$h[0] = h[1]$$

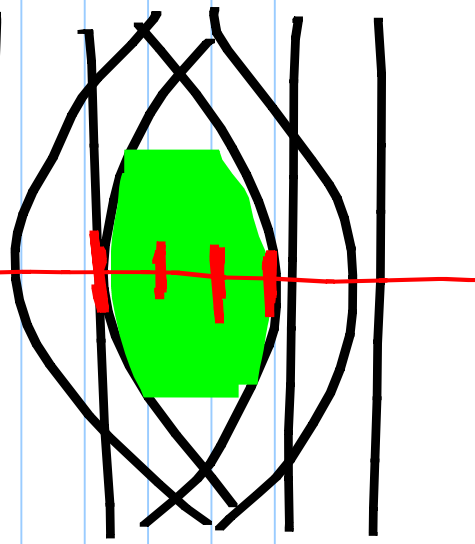
dc gain: $\sum_k h[k]$

limited to given value

$$\sum_k |h[k]|$$

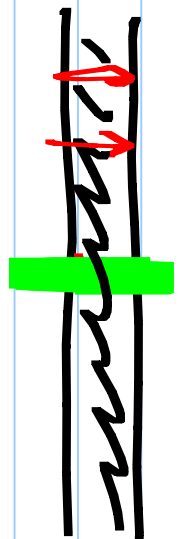
max. value



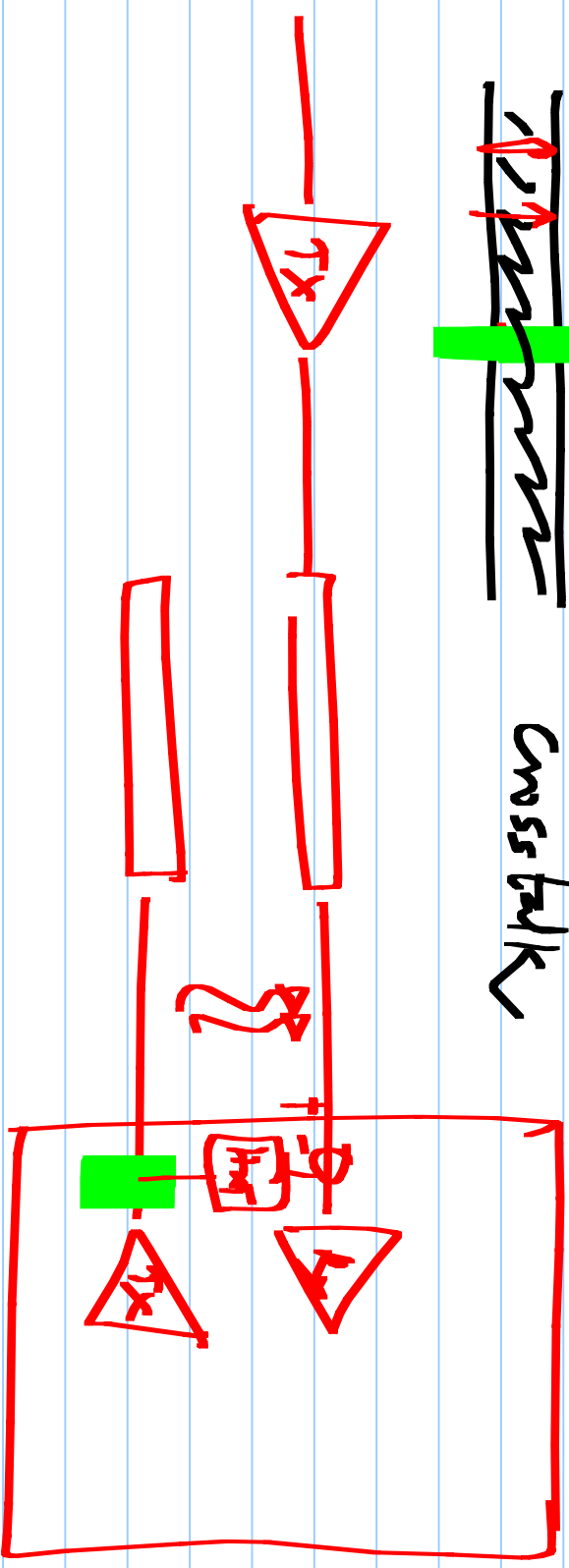


Desired

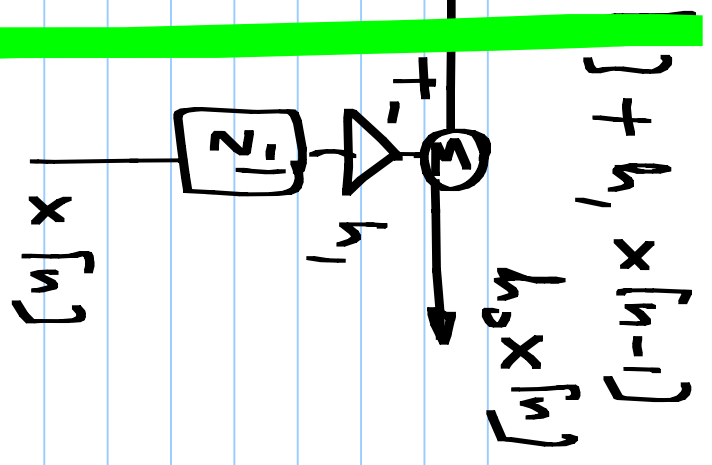
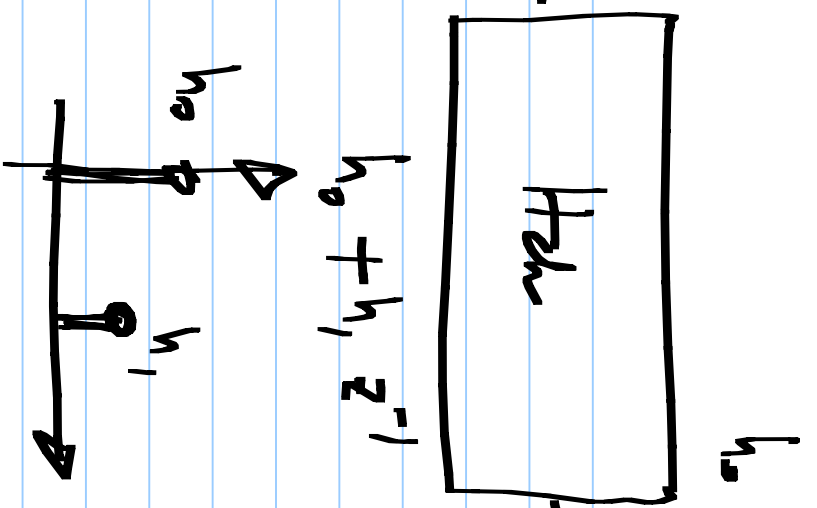
1 period of the desired signal

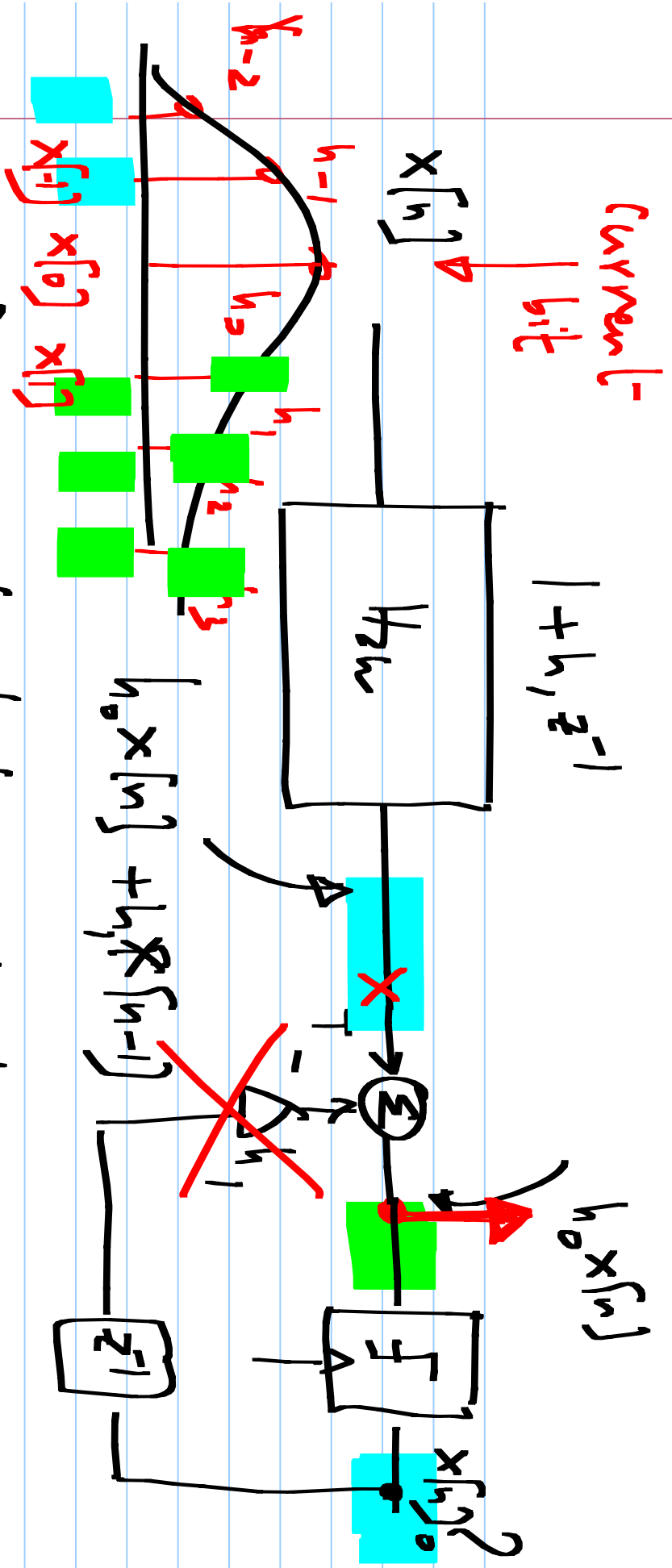


crossbar

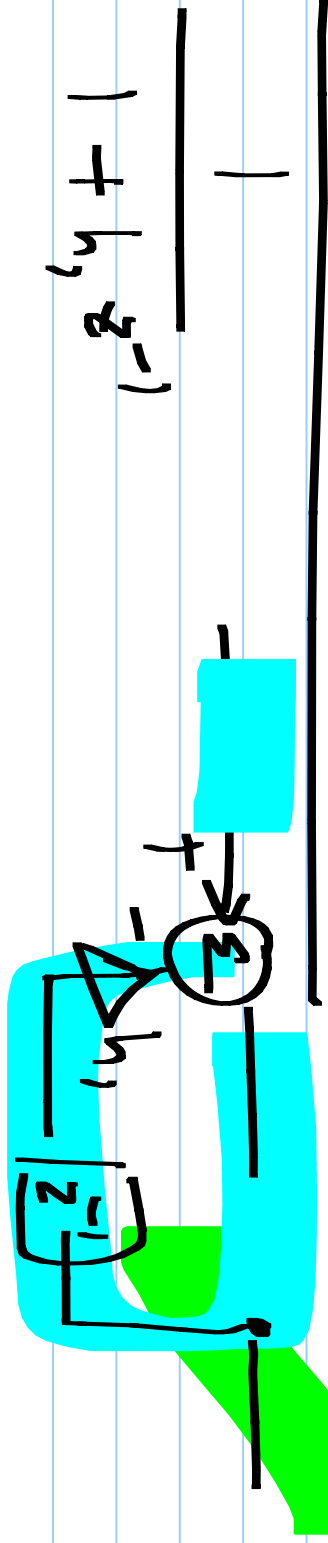


$\{a_k\} \neq 1$
 $x[n]$





Decision feedback equalization



Decision feedback equalization:

- * No noise amplification unlike in a linear equalizer.
 - * Can correct only post-cursor ISI
 - * Requires DFE to be working
-