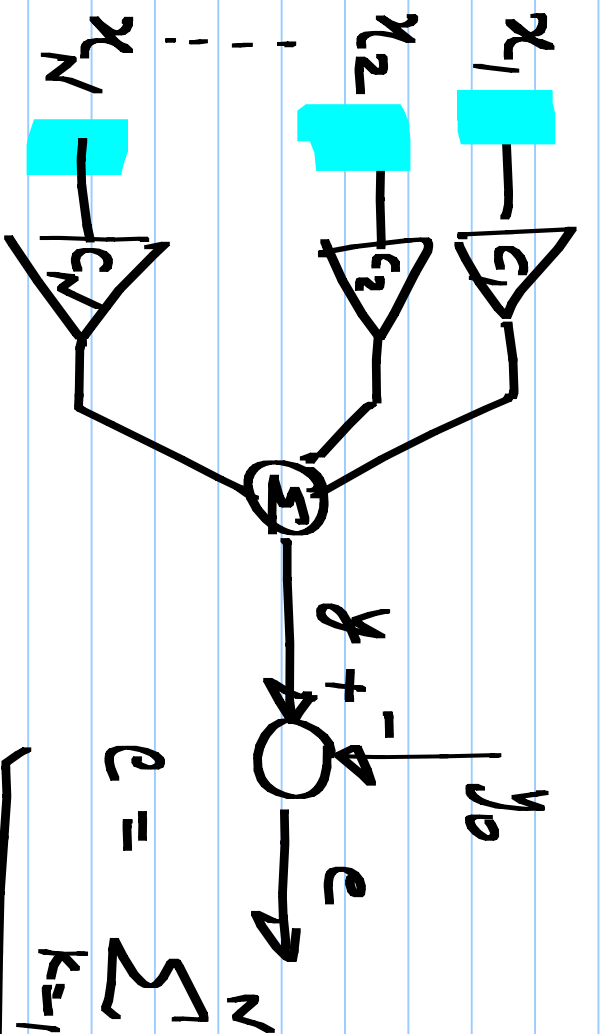


EE6322:

Equalizer adaptation.

16/4/2016



$e^2$ : Minimize  
avg of  $e^2$

$$e = \sum_{k=1}^N c_k x_k - y_0$$

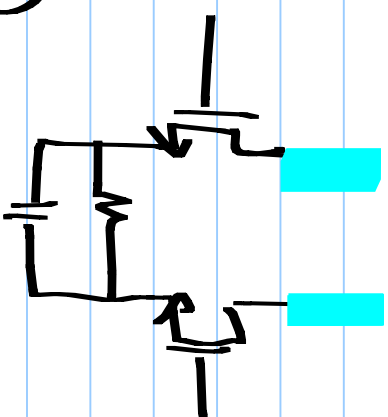
$$\frac{\partial}{\partial c_k} e^2 = 2e \cdot \frac{\partial e}{\partial c_k} = 2e \cdot x_k$$

$$c_k[n+1] = c_k[n] - \mu \cdot e \cdot x_k$$

CTLE

LMS : Coeff. update equation

$$c_k[n+1] = c_k[n] - \mu \cdot e \cdot x_k$$



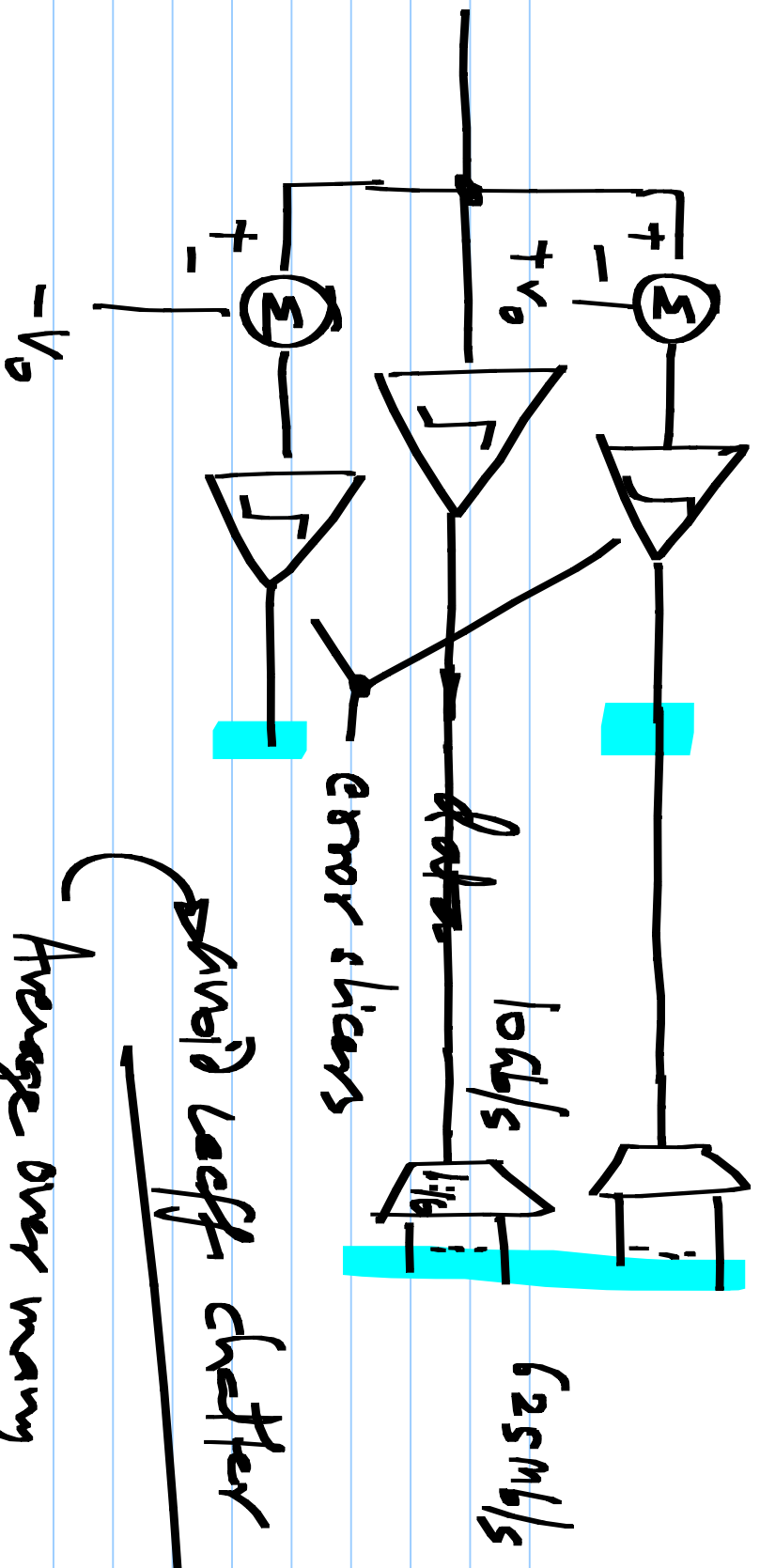
$$c_k[n+1] = c_k[n] - \mu \cdot \text{sgn}(e) \cdot \text{sgn}(x_k)$$

sign-sign : LMS

$$A_b \cdot \frac{1+s/z_1}{1+s/p_1}$$

$k^{\text{th}}$  path :  $c_k$

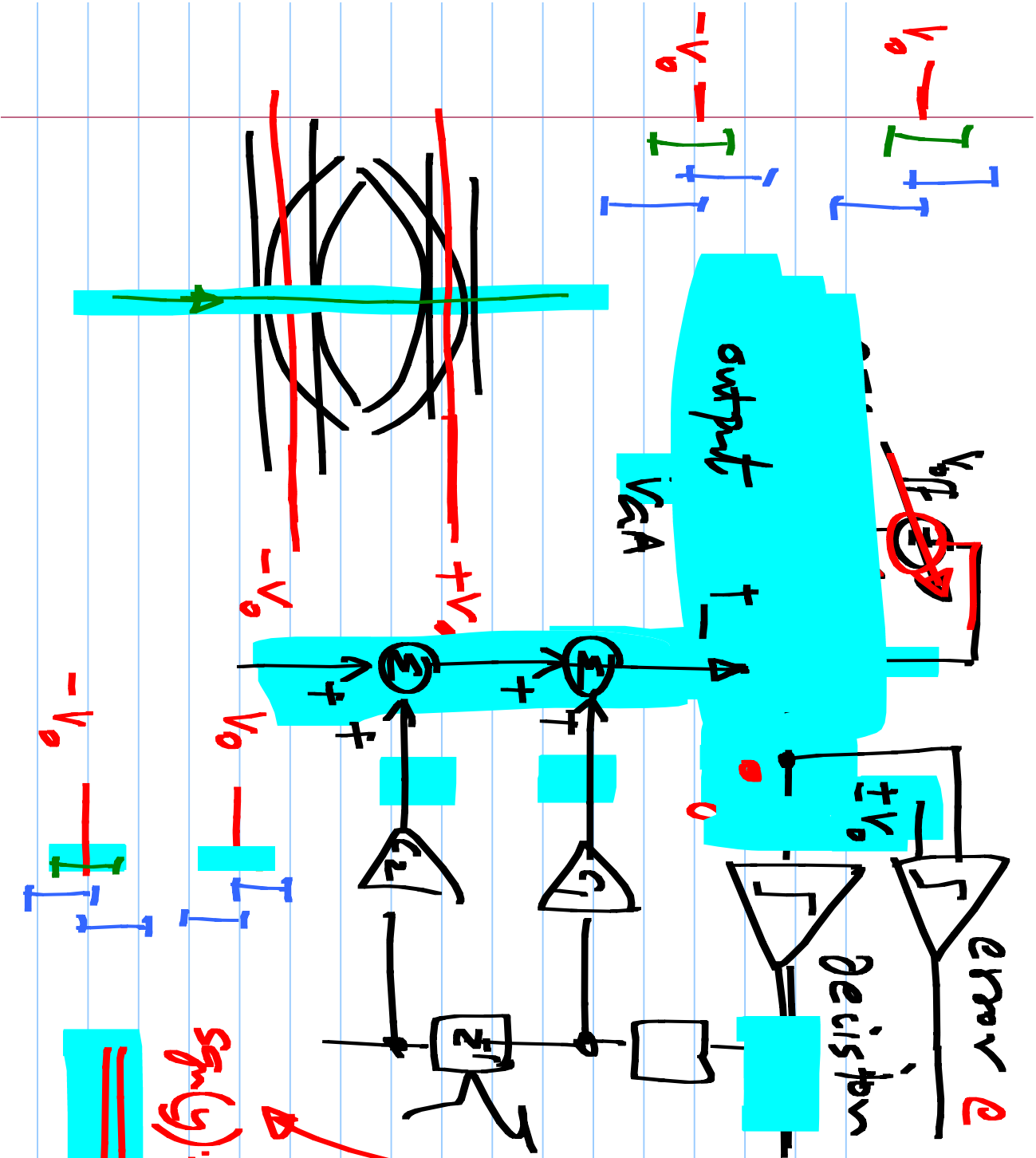
$$e = y - y_0$$



Binary code checker  
Average over many

$$C_k[n+1] = C_k[n] - \mu \left( \frac{\text{symbols}}{\text{symbols}} \right) \text{sgn}(e) \text{sgn}(C_k)$$

\_\_\_\_\_



Need a  $V_A$   
to have the

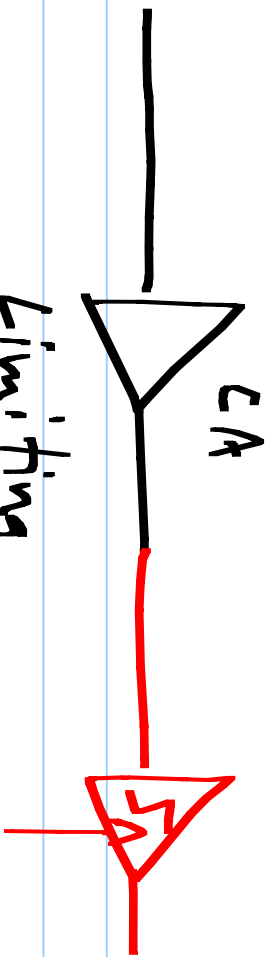
Correct amplification

Need offset

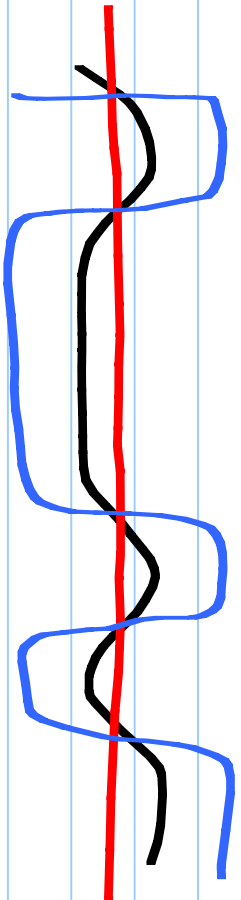
Correction

$$\text{sgn}(y) \cdot \text{sgn}(e)$$

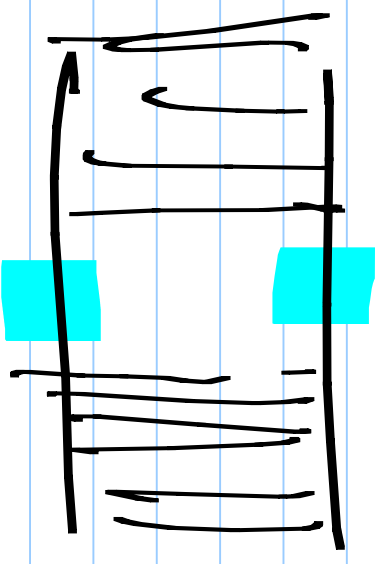
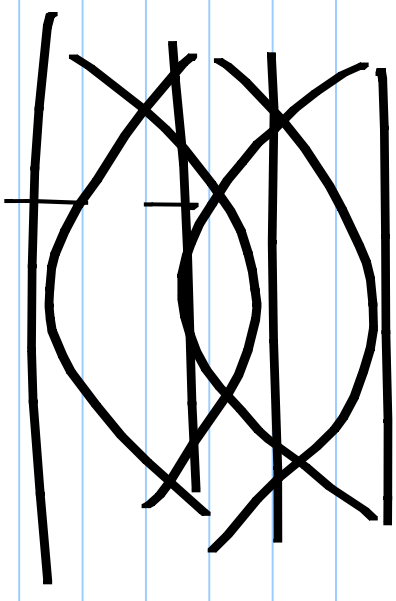
$$\text{sgn}(e)$$

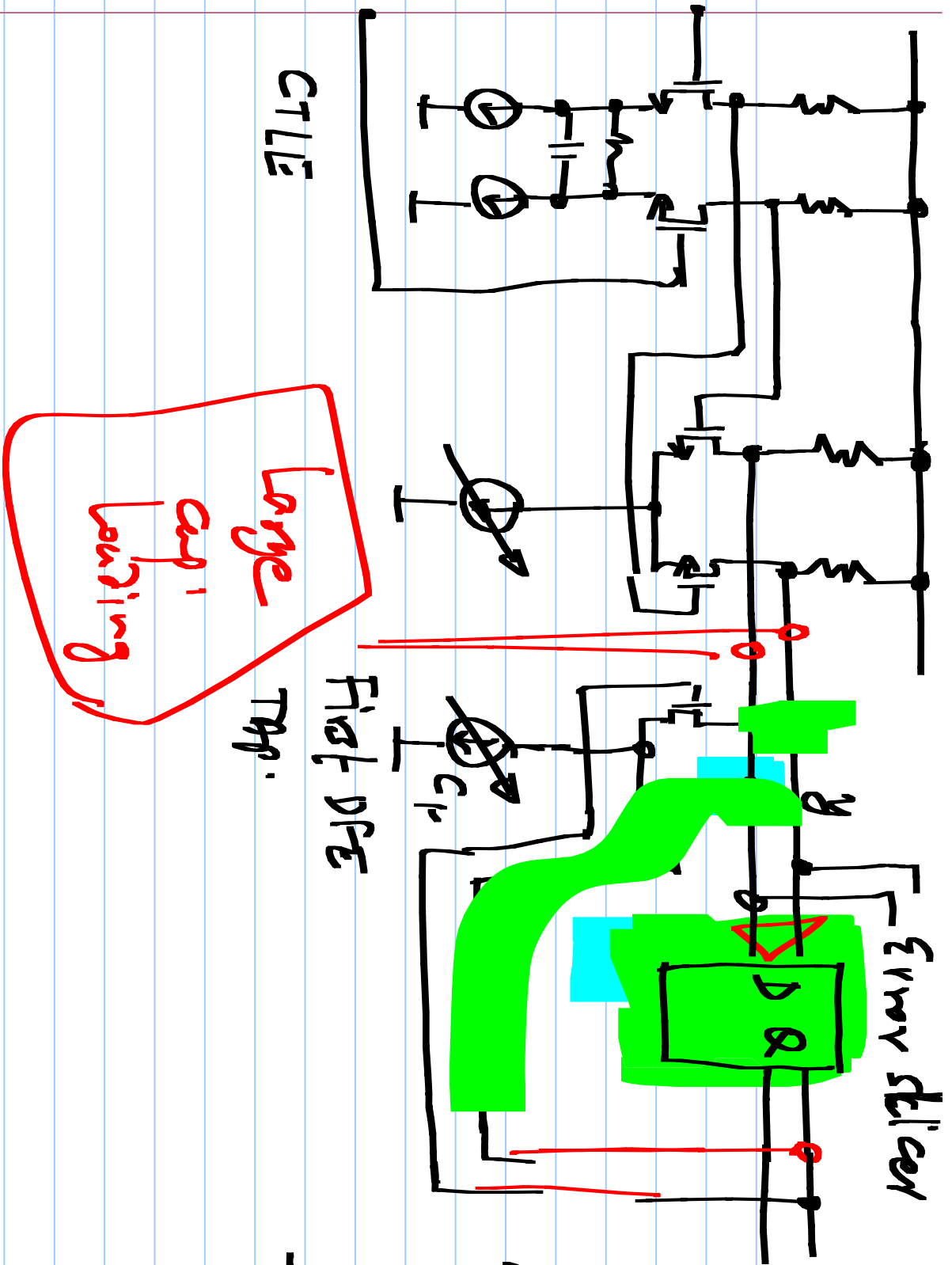


Limiting  
Amplifier



~





if  
decision  
 is instant  
always

2

