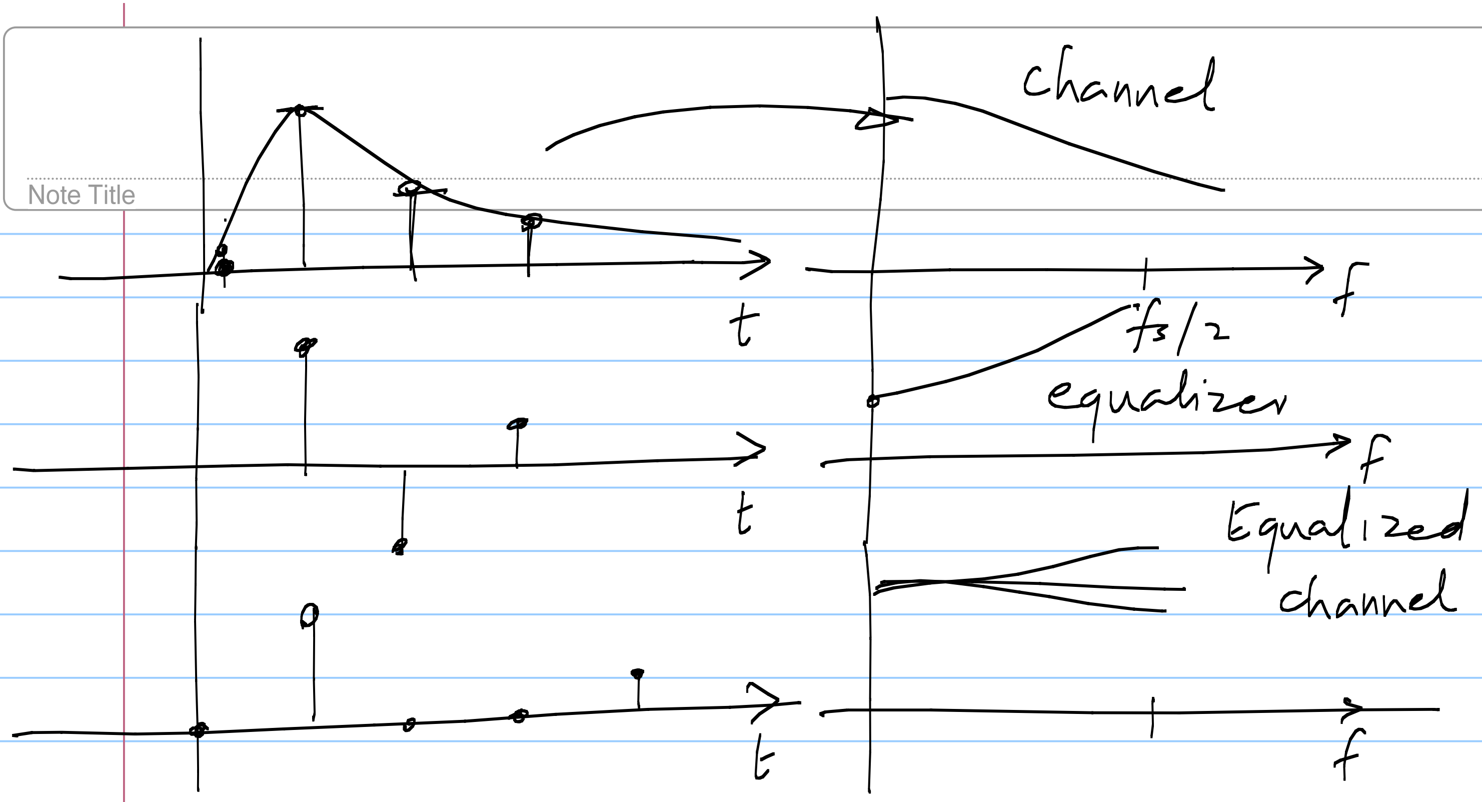
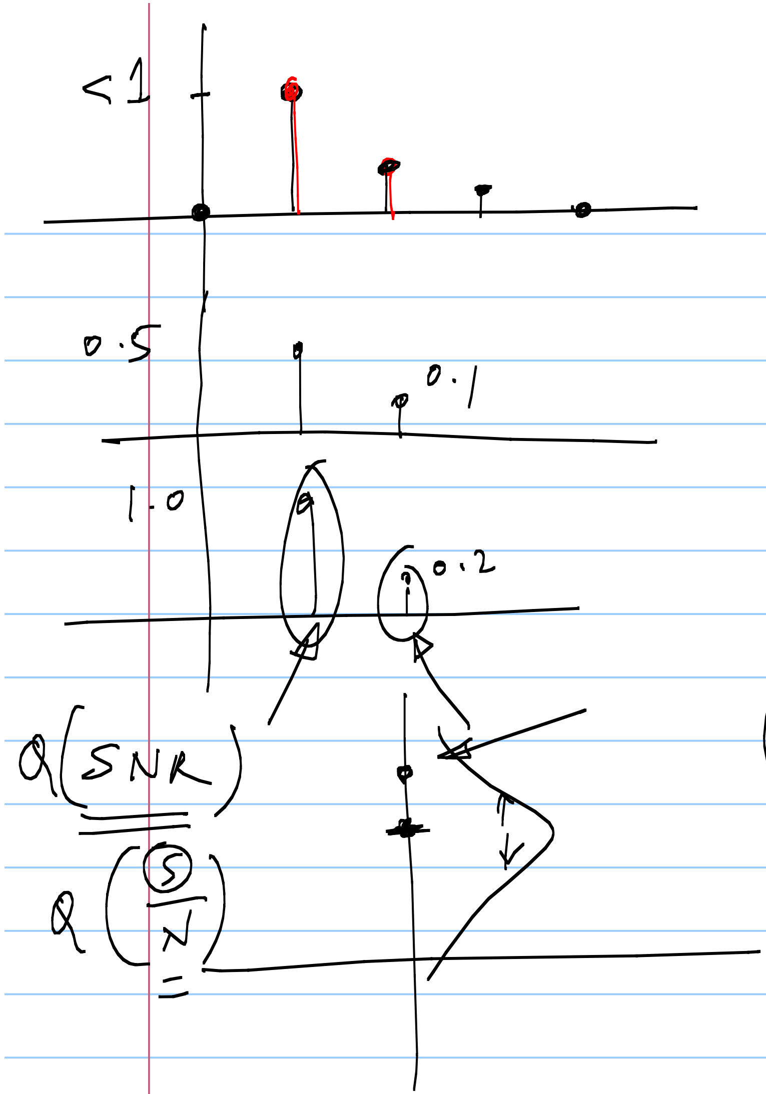
Note Title 28-08-2007



\# Equalizer taps ≥ \# significant taps in the channel (+Tx) response

Residual ISI reduced by increasing the number of taps

Set channel + equalizer taps to zero (as many as possible)



$$Q(SNR) = Q\left(\frac{S}{N}\right)$$

$h[0], h[1] * g[0]\ g[1]\ g[2]$

$h[0] < 1$, $h[1] > 0$

$$h[0] \cdot g[0] = 1 \qquad g[0] = \frac{1}{h[0]}$$

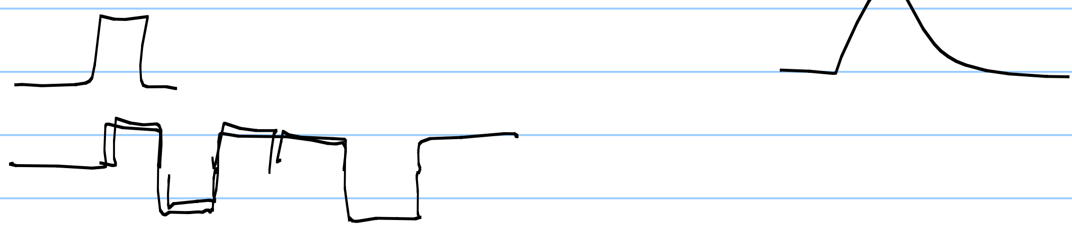
$$h[1] \cdot g[0] + h[0]\,g[1] = 0 \qquad g[1] = -\frac{h[1]}{h[0]^2}$$

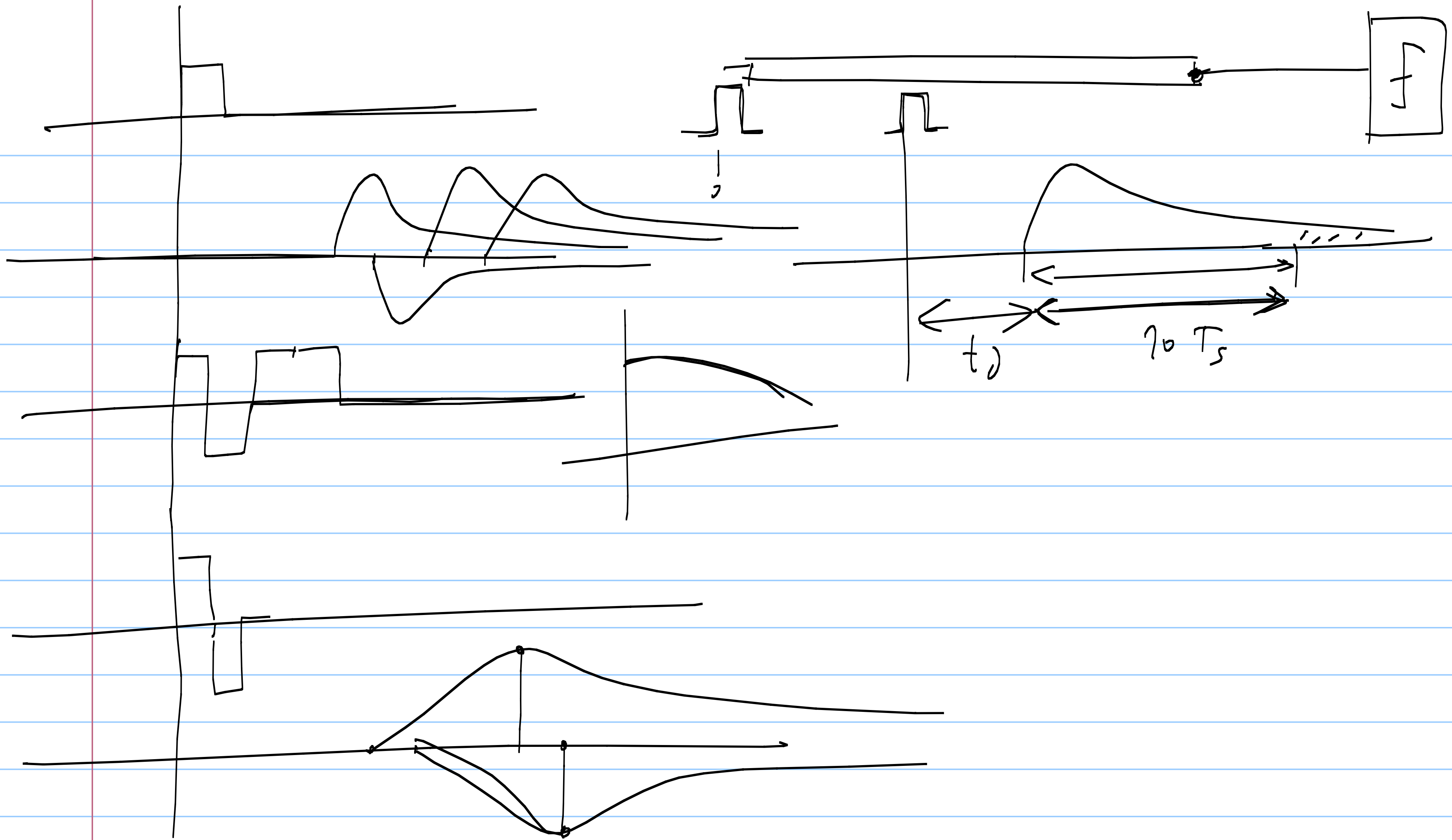
$$h[1]\,g[1] + h[0]\,g[2] = 0 \qquad g[2] = \frac{h[1]^2}{h[0]^3}$$

$$h[1]\,g[2]$$

$$\left(\frac{1}{h[0]}\right)\left[1 - \frac{h[1]}{h[0]} z^{-1} + \frac{h[1]^2}{h[0]^2} \cdot z^{-2}\right]$$

Channel




t_d
$10\,T_s$

$$\left(h[0] + h[1] z^{-1}\right)\left(g[0] + g[1] z^{-1}\right)$$

$$\underbrace{h[0]\, g[0]}_{1} + \underbrace{\left(h[1] g[0] + h[0] g[1]\right)} z^{-1} + \underbrace{\left(h[1]\, g[1]\right)} \cdot z^{-2}$$

$$1 + \underbrace{\left(\frac{h[1]}{h[0]} + h[0] \cdot g[1]\right)} z^{-1} + \underbrace{\left(h[1]\, g[1]\right)} z^{-2}$$

$$\left(\frac{h[1]}{h[0]} + h[0]\, g[1]\right)^2 + \left(h[1]\, g[1]\right)^2 = \text{Error} \text{ — Minimize}$$

$$2 \cancel{h[0]} \left(\frac{h[1]}{\cancel{h[0]}} + h[0]^2\, g[1]\right) + 2 h[1]^2 \cdot g[1] = 0$$

$$h[0] = 1$$

$$g[1] = \frac{-h[1]}{h[0]^2 + h[1]^2}$$

$$1 + \left(h[1] - \frac{h[1]}{1 + h[1]^2}\right) z^{-1} - \frac{h[1]^2}{1 + h[1]^2}$$

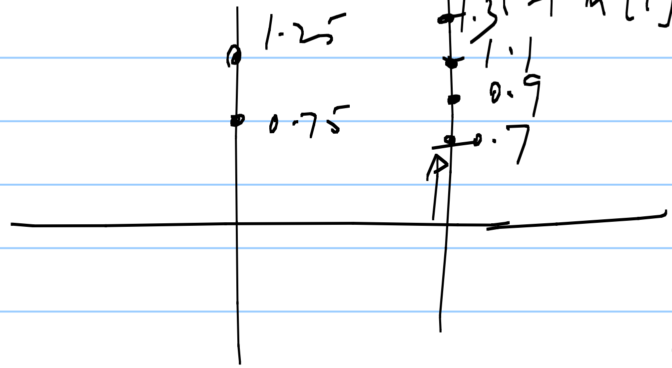
$h[0] = 1$, $h[1] = 0.5$

① Reduce intermediate taps to zero.

$$\frac{h[1]^3}{1 + h[1]^2} \qquad \frac{0.125}{1.25}$$

$g[0] = 1$, $g[1] = -0.5$

$1 + 0z^{-1} - 0.25z^{-2}$

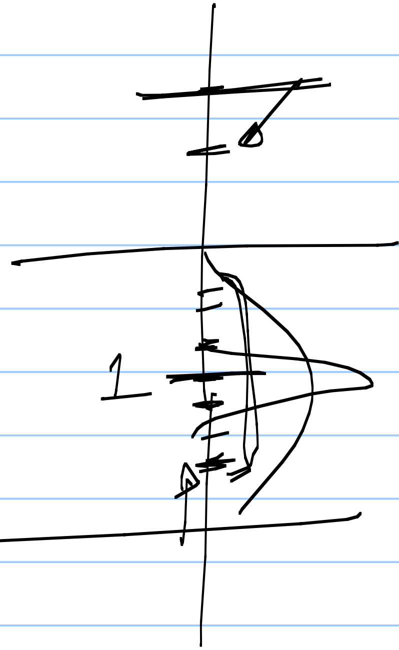


② $1 + 0.1z^{-1} - 0.2z^{-2}$

~~To minimize the worst case re~~

To maximize the worst case received voltage:

minimize $\sum_{n \neq \text{cursor}} |h_{\text{cheq}}[n]|$



Minimize the meansquare value of the received values around ± 1