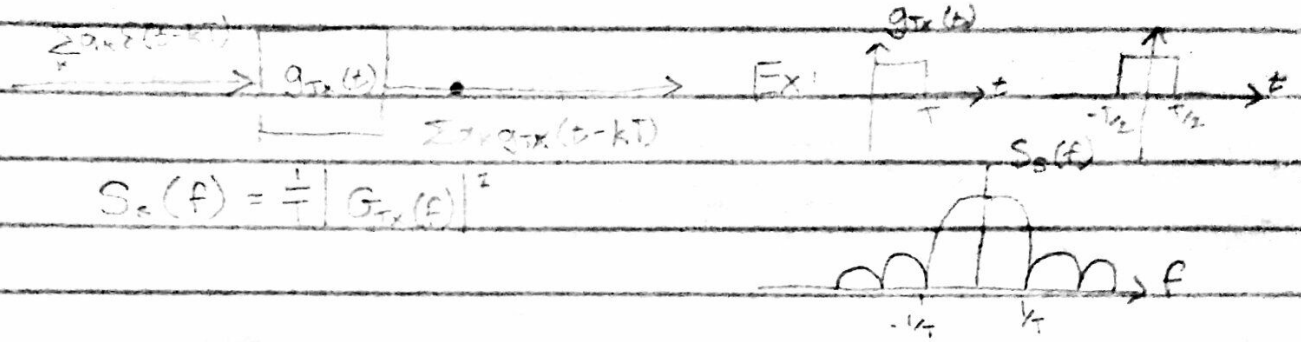
10/07/15

Lecture 11

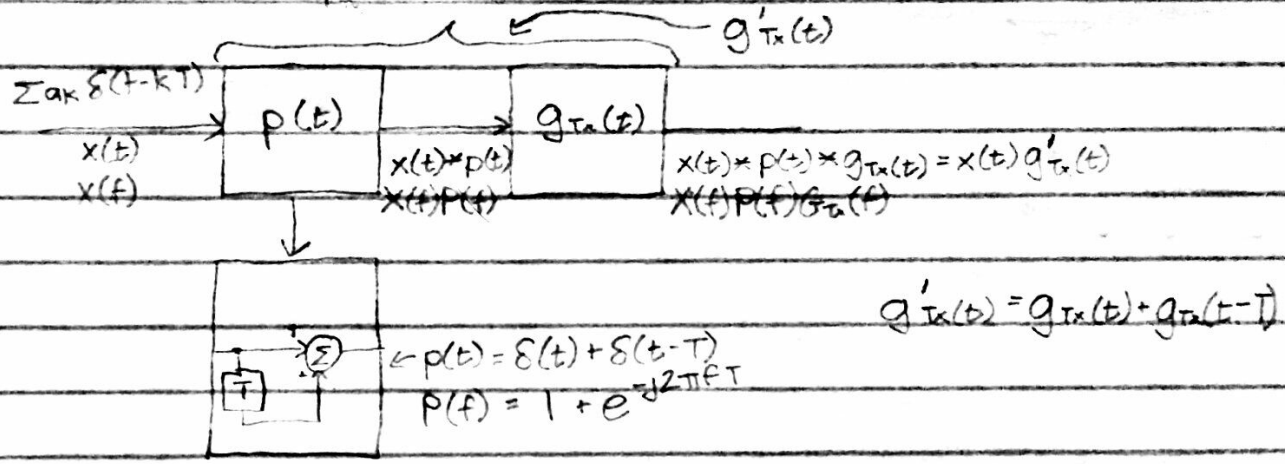


$$S_s(f) = \frac{1}{T}\left|G_{Tx}(f)\right|^2$$

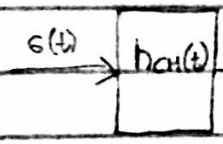
Q. If $S_s(f)$ has a shape not desirable, then what to do?

A1. replace $g_{Tx}(t)$ by $u_{Tx}(t)$

A2. insert a "precoder"

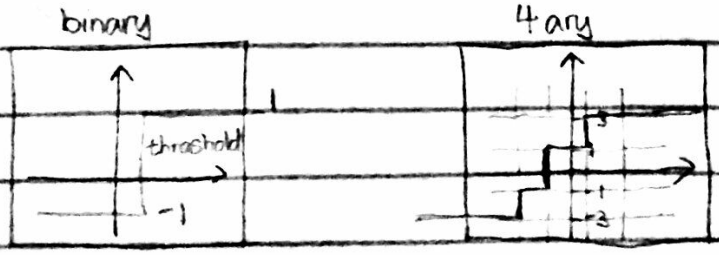


$$g'_{Tx}(t) = g_{Tx}(t) + g_{Tx}(t-T)$$



$$S_y(f) = S_s(f)\left|H_{Rx}(f)\right|^2$$

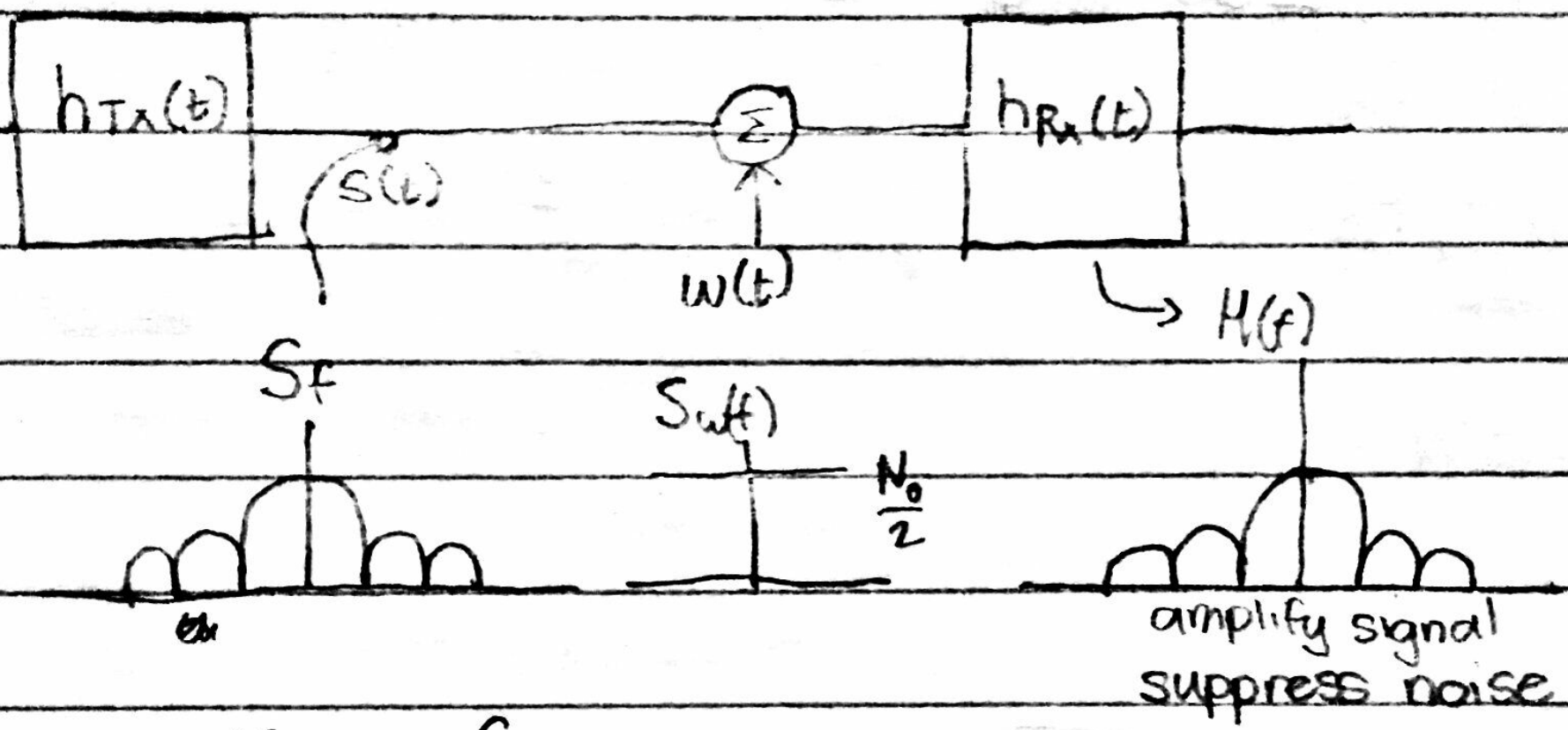
Threshold Detector



$$P_N \triangleq \int_{-\infty}^{\infty} S_N(f)df = R_N(\tau)\Big|_{\tau=0} \triangleq E[n(t)n(t+\tau)]\Big|_{\tau=0}$$
$$= E[n^2(t)]$$

$$h_{Rx}(t) = h_{Tx}(T-t)$$

$(\bar{a}, \bar{b})$ is max when $\bar{a} = c\bar{b}$



$$\int |H_{Tx}(f)|^2 df = \underbrace{\int |h_{Tx}(t)|^2 dt}_{E}$$