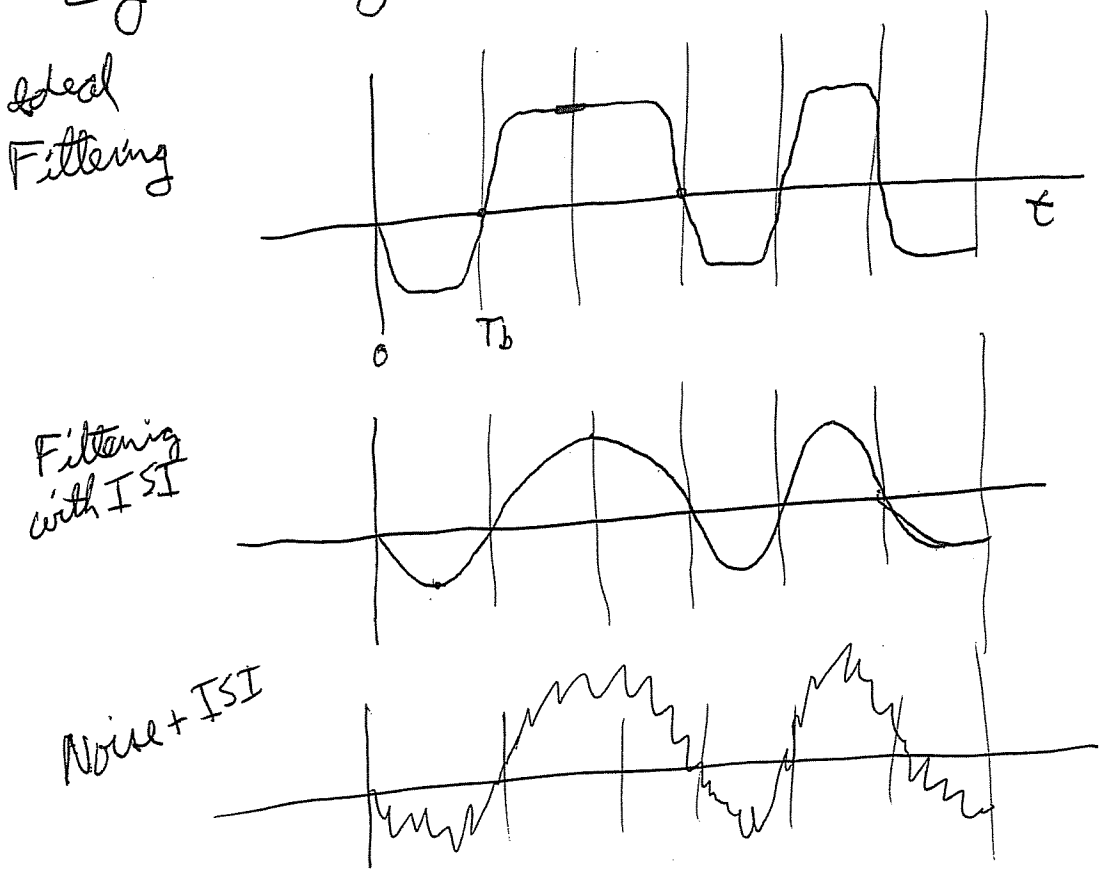
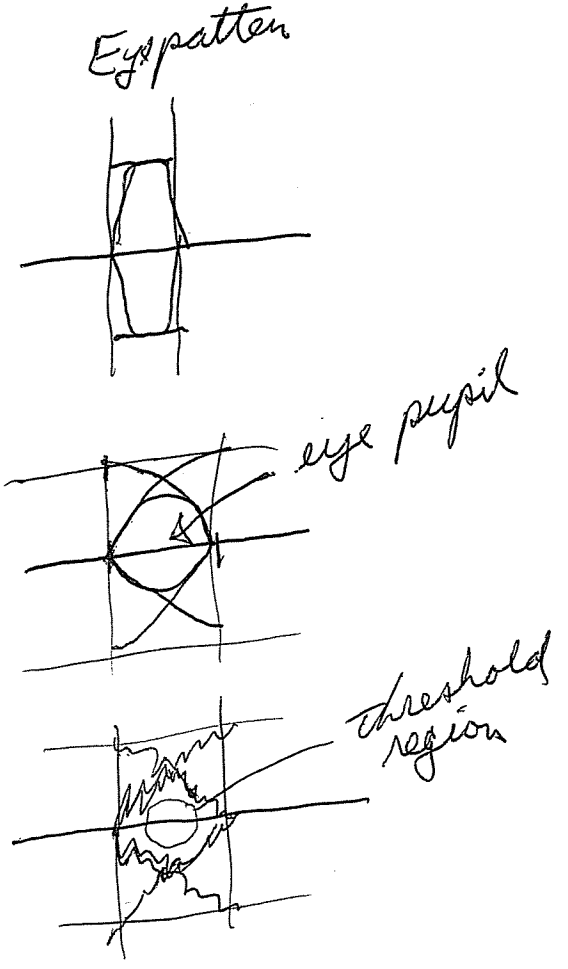
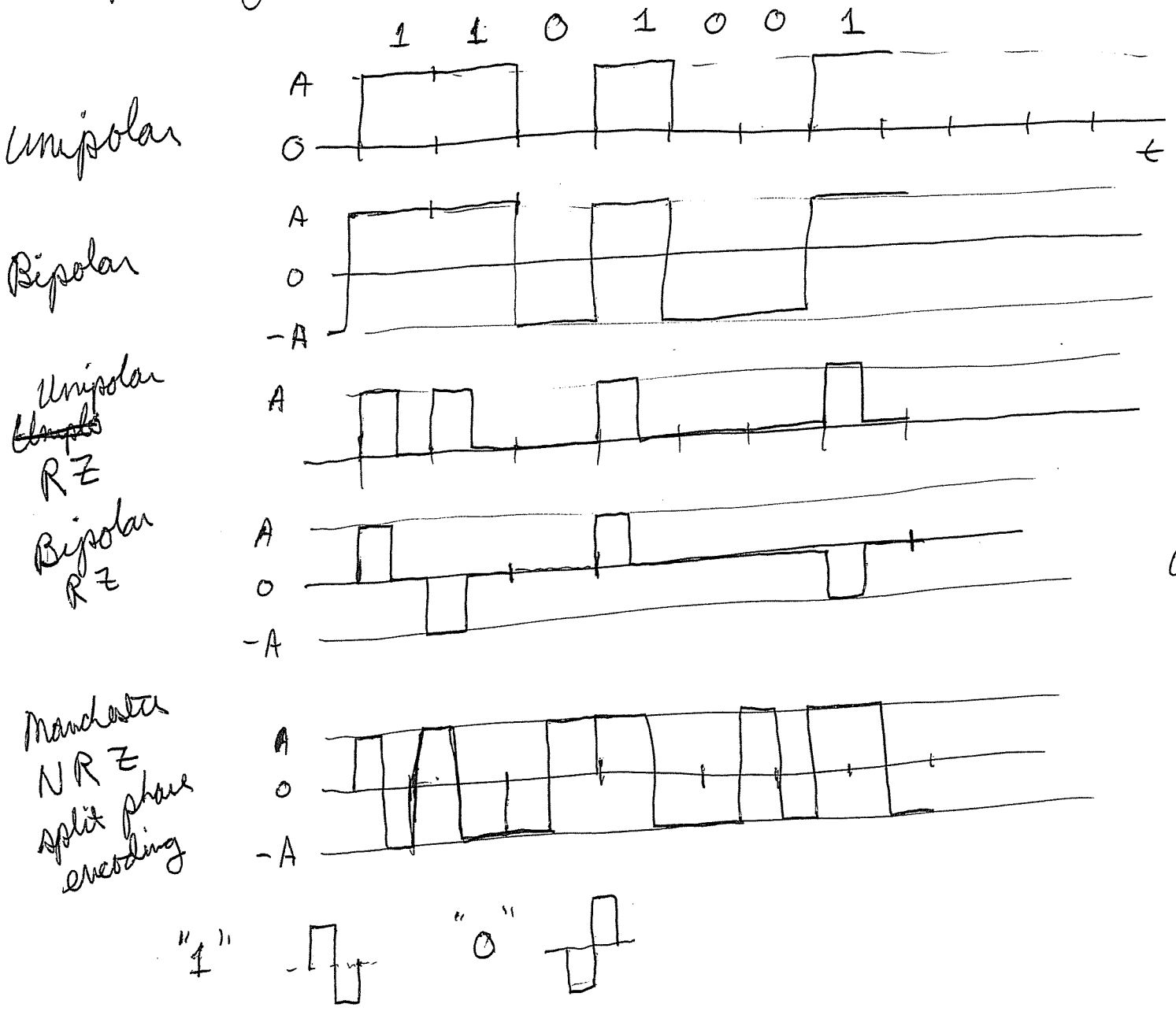
Lecture 14 EE511

Eye diagrams : show slide





Binary Line Coder and Differential Coding



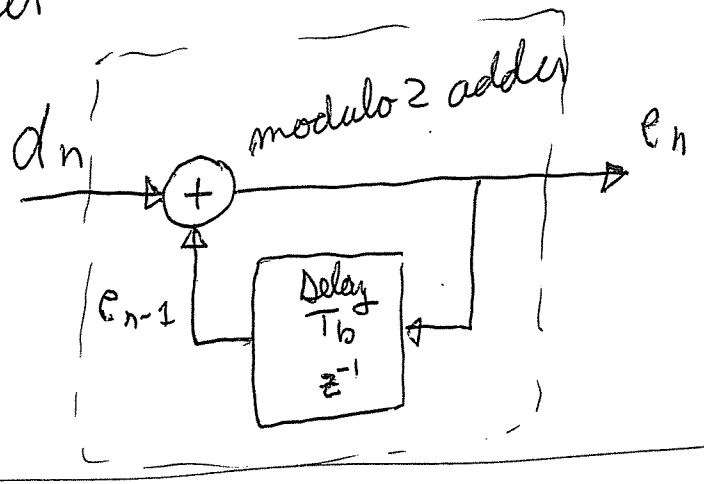
other coding

gray coding

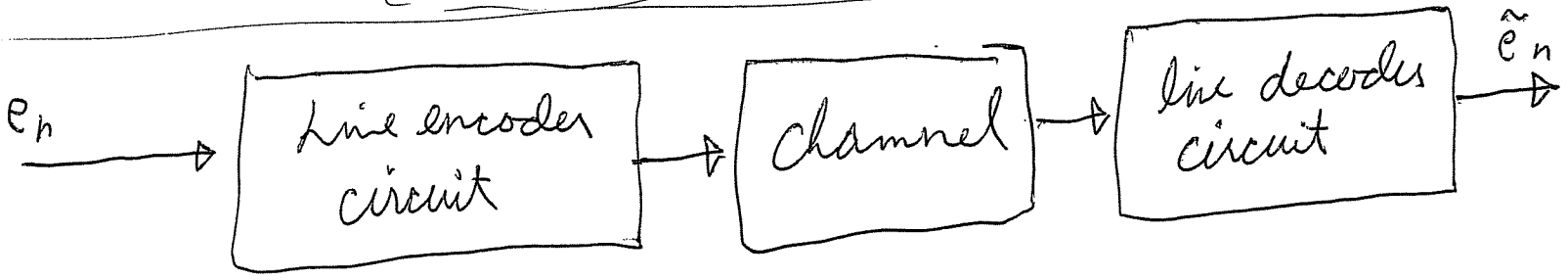
0	00
1	01
2	11
3	10

Differential Coding

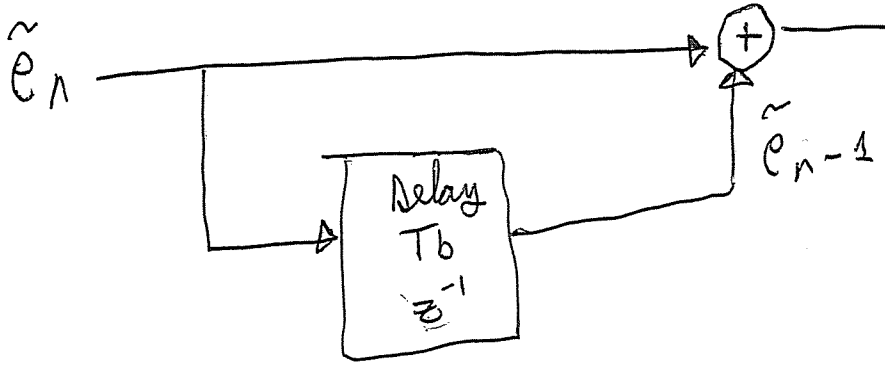
Diff. Encoder



$$e_n = d_n \oplus e_{n-1}$$



Diff decoder



$$\tilde{d}_n = \tilde{e}_n \oplus \tilde{e}_{n-1}$$

Example

Encode $e_n = d_n \oplus e_{n-1}$

$d_n =$ X 1 1 0 1 0 0 1

$e_n =$ 1 (init) 0 1 1 0 0 0 1

$e_{n-1} =$ 1 0 1 1 0 0 0 1

$\tilde{d}_n =$ 1 1 0 1 0 0 1

$= \tilde{e}_n \oplus \tilde{e}_{n-1}$

Decode negative sequence

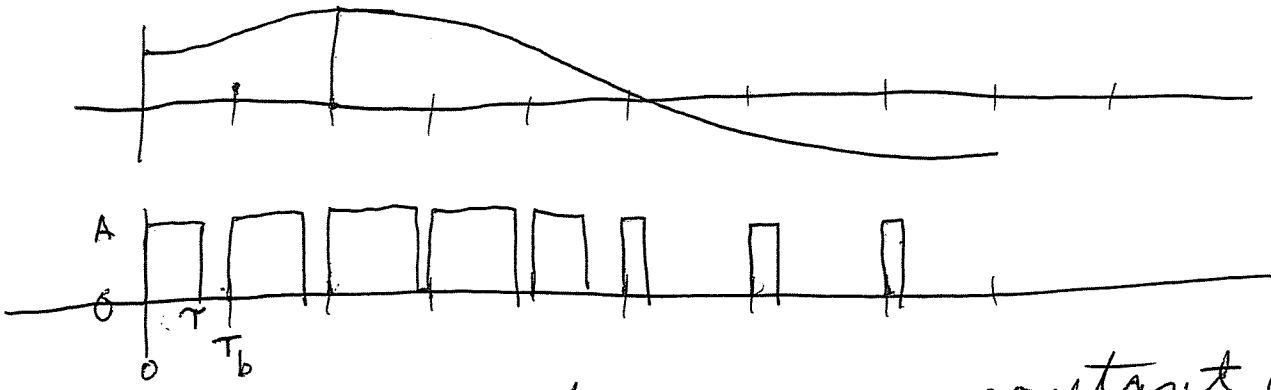
$\tilde{d}_n$ 1 1 0 1 0 0 1

$\overline{\tilde{e}}_n =$ 0 1 0 0 1 0 0 0

$\tilde{e}_{n-1} =$ x 0 1 0 0 1 1 1

$\tilde{d}_n =$ 1 1 0 1 0 0 1

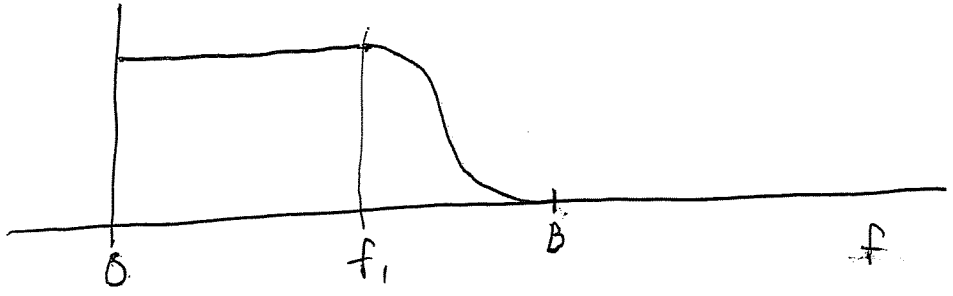
PWM



consider the spectrum of a constant output

cosine - Rolloff Filtering

$$H_e(f) = \begin{cases} 1 & |f| < f_1 \\ \frac{1}{2}\left(1 + \cos\left[\frac{\pi |f| - f_1}{2 f_\Delta}\right]\right) & \\ 0 & |f| > B \end{cases}$$



see text for frequency response