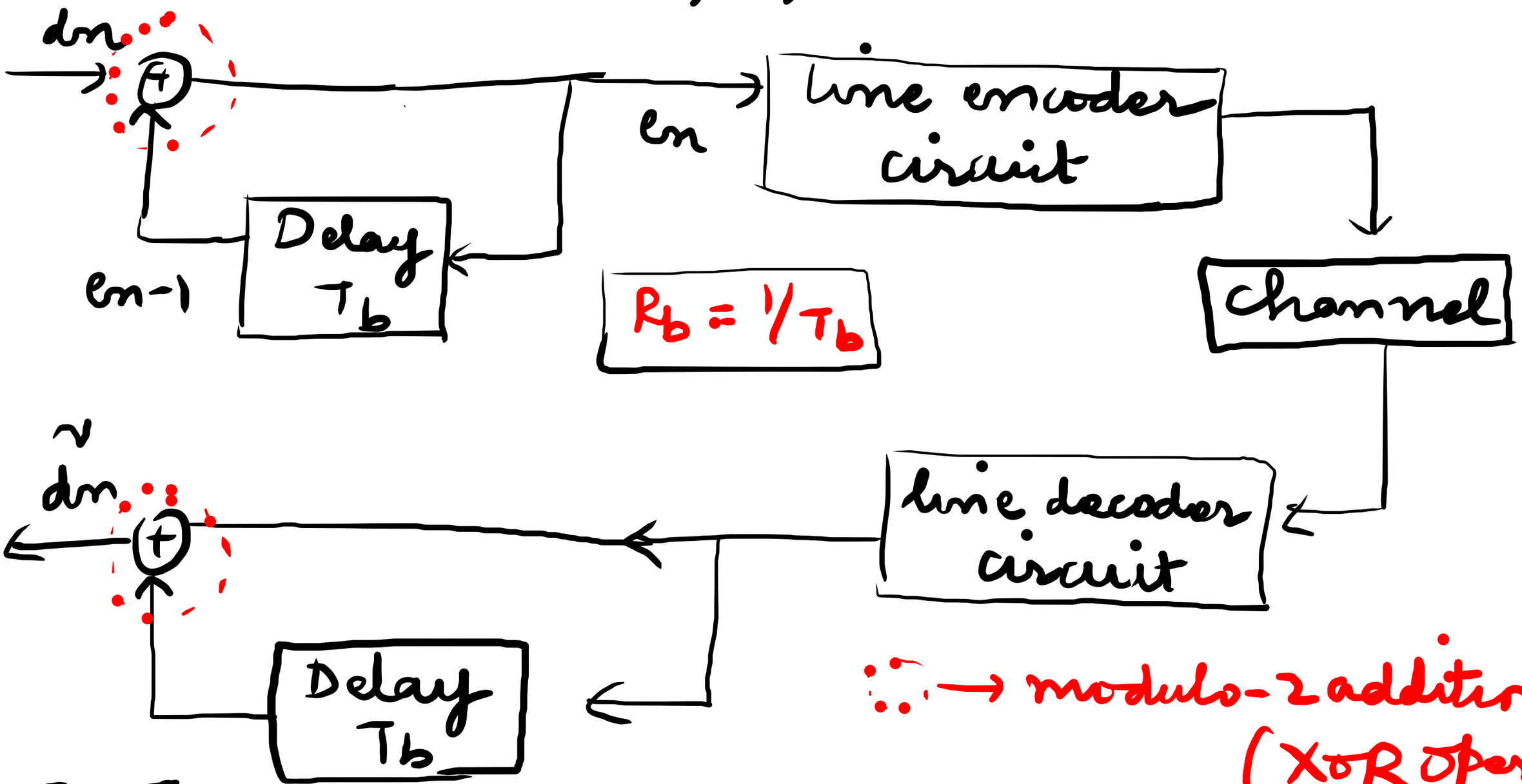
Lec-17, DC, 24-25



Line codes (LCs)

Binary 1s & 0s (in PCM) maybe represented / converted into electrical pulses

(waveforms) for the purpose of Tx. over the channel. This process is called line coding or Tx. coding

Major categories of LC:- RZ (return to zero)
NRZ (non return to zero)

RZ:- Waveform returns to a zero-volt level for a portion of the bit interval. (usually 1/2)

Further classification is acc. to the rule that is used to assign voltage levels to rep. the binary data.

unipolar:- 1: +A volt
0: 0 level/gnd.
] also called on-off keying.

Polar:- 1 & 0 by equal +ve & -ve levels.

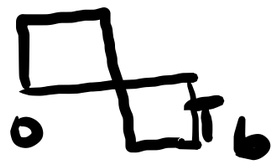
Bipolar :- (or pseudo ternary)

1 :- alternately +ve or -ve values

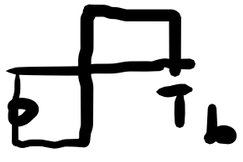
0 :- zero level / gnd / volt

use of 3 encoded signal levels to represent 2-level (binary) data. Also called AMI :- Alternate mark Inversion

Manchester :-



1 :- +ve half-bit period pulse followed by a neg. half-bit " "



0 :- -ve half-bit period pulse foll. by a +ve " " " "

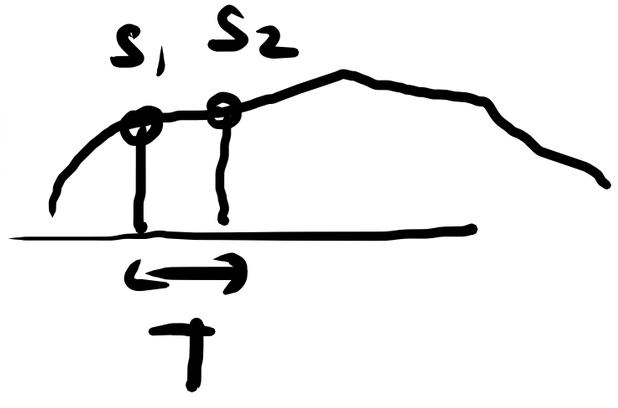
Also called as Split-phase encoding

The above terminology is consistent with the telepho
-ne industry. Some diff. would be there for other
industries/use cases.

H.W. Contrast diff. line codes as for 4-5 metrics
affecting a comm. system. Refer to Lathi/
Sklar/Couch's/
Haykin book.

DPCM:- Differential PCM

Why?- PCM- not very efficient ($B_T = nB$) - & gener
-ates a lot of bits & requires so much B.W. to
Tx. i.e., we have only assumed
m(t) to be B.L. to B Hz & designed
PCM system. No further/more
prob. of m(t) are taken into role.



Intuition :- Can the characteristics of source signal help to improve the encoding efficiency of A/D conversion ?