WIRELESS LANS (WiFi)

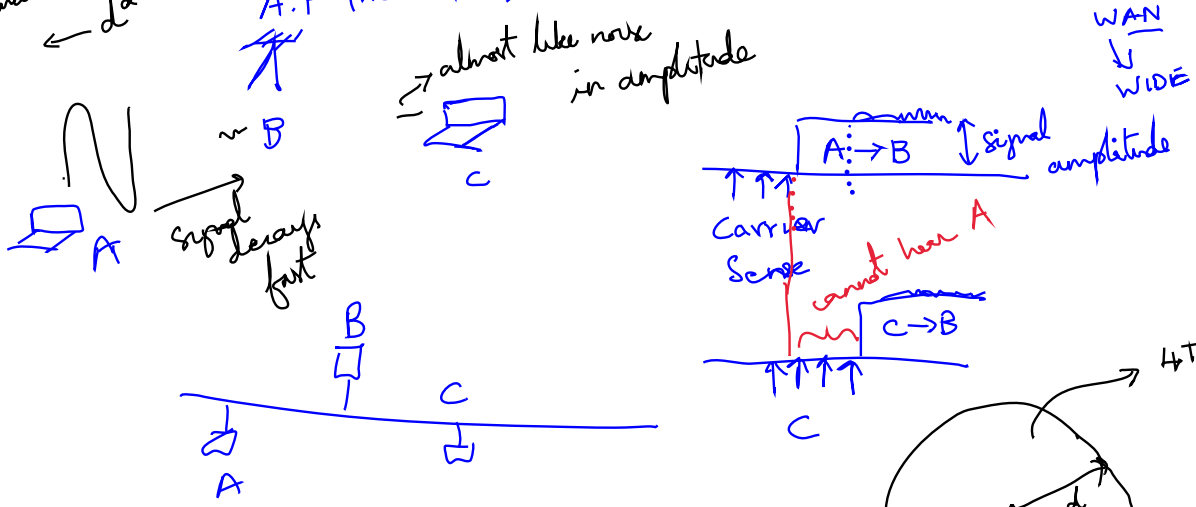
$2 < \alpha < 5$

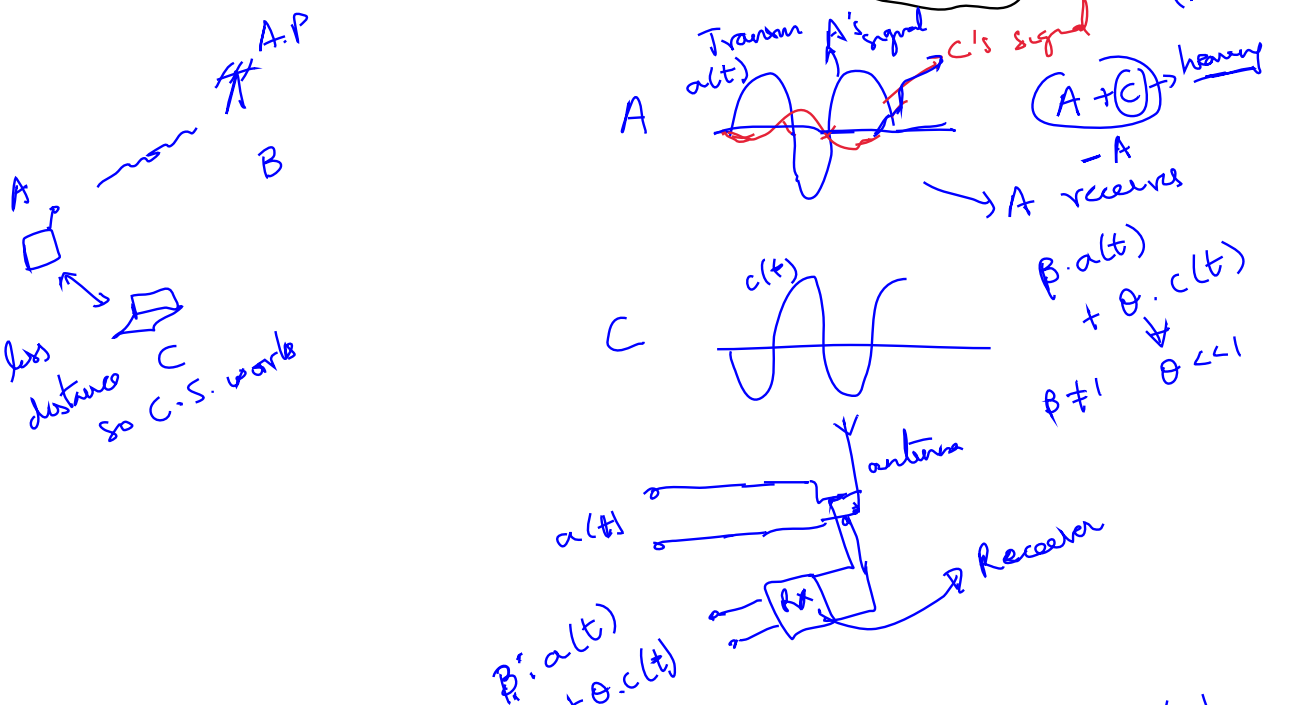
distance $\frac{1}{d^{\alpha}}$

A.P (Access Point)

CSMA-CD ??

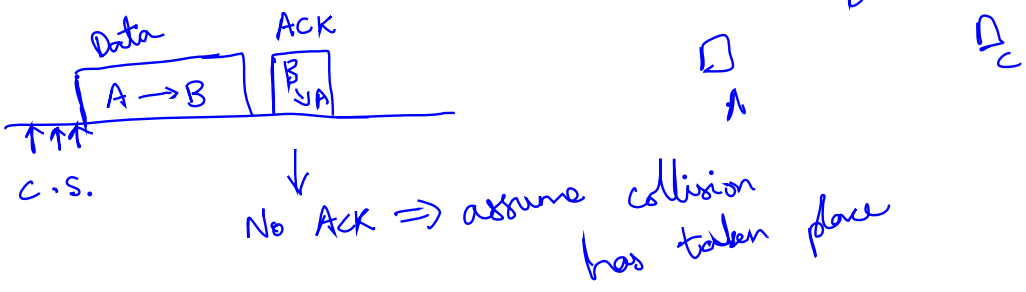
LOCAL
LAN
WAN
WIDE



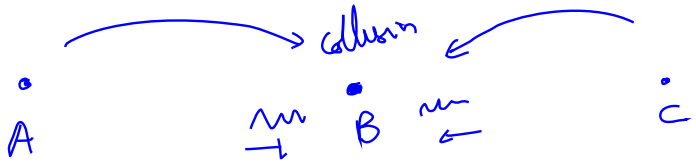


$$\beta \cdot a(t) + \theta \cdot c(t) - a(t) = (\beta - 1)\, a(t) + \theta \cdot c(t)$$

C.S. ✓ ; How to detect collisions?

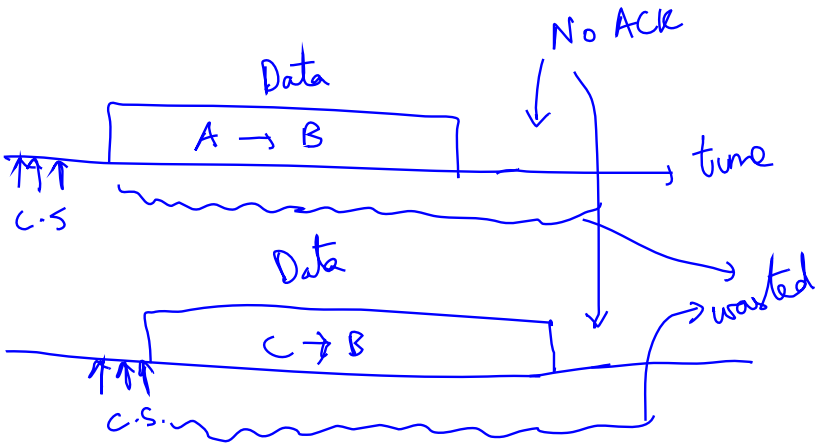


HIDDEN TERMINAL PROBLEM



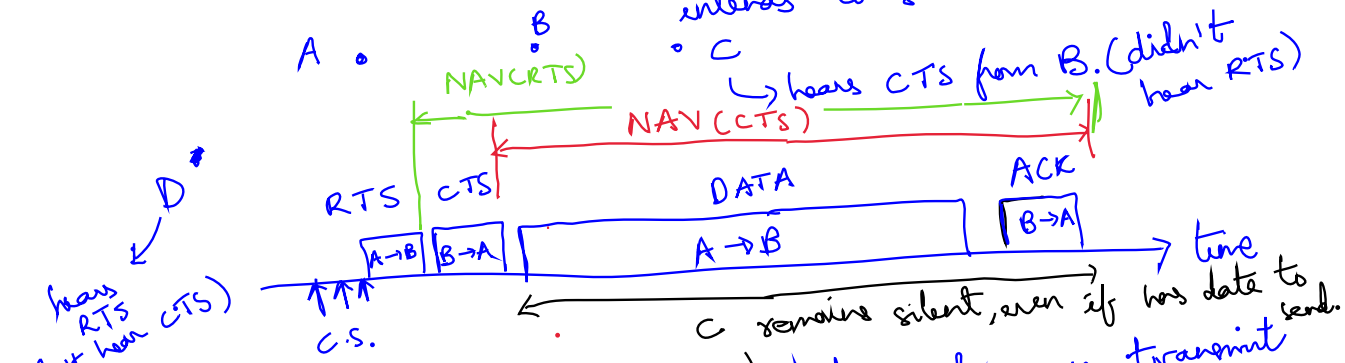
B can hear A & C

A & C cannot hear each other (hidden)



Virtual Carrier Sensing

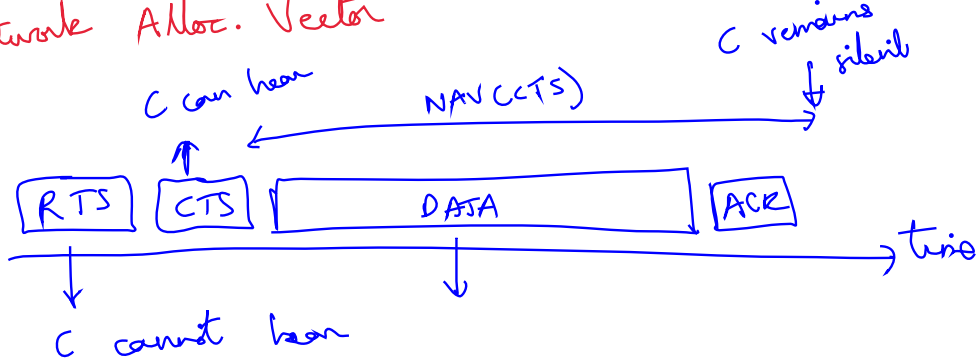
RTS: Req. to send (short frame to tell receiver that it intends to send a DATA frame)



CTS: Clear to send (short frame, saying that sender can transmit DATA)

→ Virtual C.S.

NAV: Network Allot. Vector

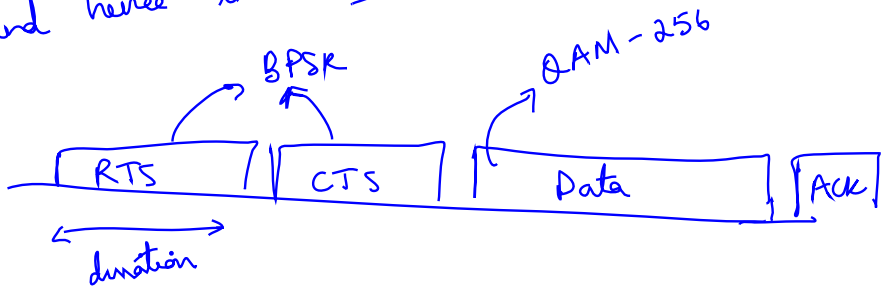


Rule: Anyone hearing ~~a~~ RTS or CTS should be silent for NAV mentioned in it.

Option: 1) Don't use RTS/CTS : C.S., DATA, GET ACK → try to retransmit if No ACK

2) Use RTS/CTS : C.S., RTS, CTS, DATA, ACK → try to retransmit if No ACK
↳ No CTS, assume collision, try to retransmit later

- Usually sent using lower modulation (eg. BPSK) and hence their duration is large



- RTS/CTS short and imp data hence needs high SNR ⇒ BPSK
- BPSK has 1 bit / symbol hence takes much time