1 & skeper closing phane glottal waveform Shape re voice qualify cm3/5 CDEEP **IIT Bombay** EE 679 L 10 / Slide 1 x.x(t) · Modal · Breathy - Hoanse · Falsetto moile Perception production — acoustics · signal, spectrum

(M), (n)

plosives

closure - release - transition into vowel burst of noise

y(n) n[n]

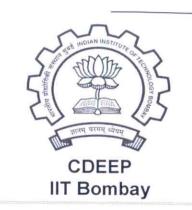
< H(z)

4

(H(ejo))

X(N)

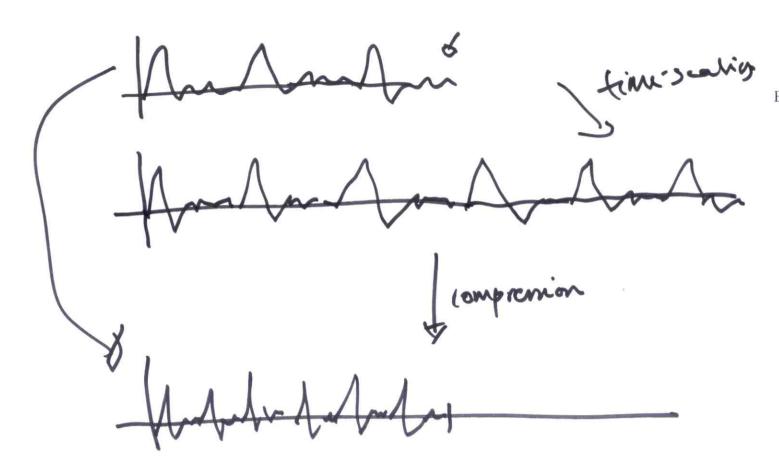


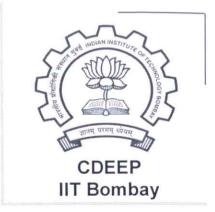


EE 679 L_10 / Slide 2

FO = 190 Hz -> To = 140 S.

Pitch-shifting

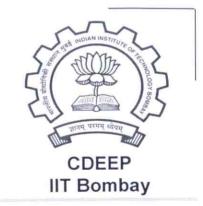




EE 679 L 10 / Slide 3



Time-domain methods of speech processing



1. Eaugy - Stort-time energy =

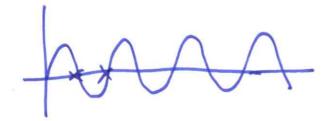
EE 679 L / Slide 4

Any short-time analyses:

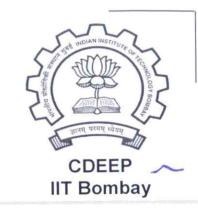
$$Q(n) = \sum_{m=-\infty}^{\infty} T(s[m]w[n-m])$$
fin lun windon

STE: $E(n) = \sum_{m=-\infty}^{\infty} s^2(m) w^2(n-m)$ $m=-\infty$

S-TZCR =



VAD



EE 679 L 10 / Slide 5

1000m

the state of the s

hi ZCR

#20/10m)

P

low-ZCR

STE, STZCR



Speech or Silence