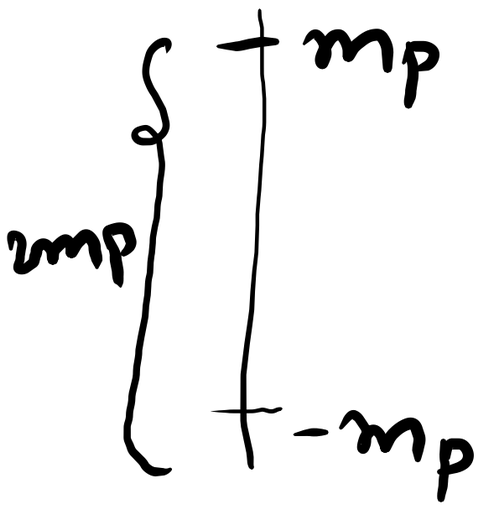
Lec-11, DC, 24-25, Sec-A



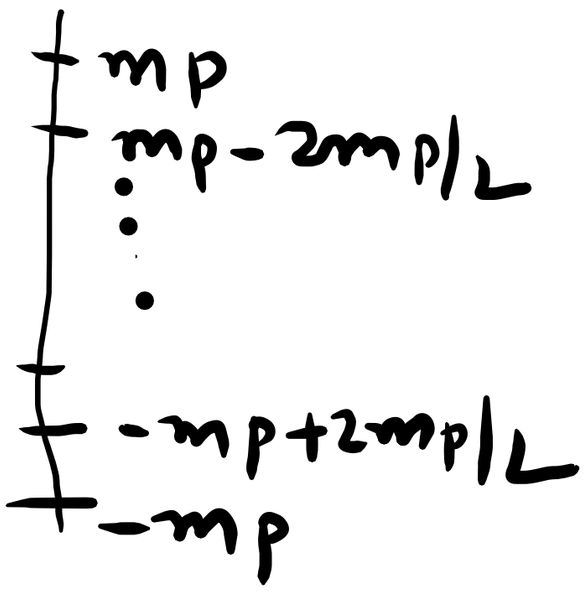
let us divide this into L levels.

for uniform separation b/w levels, what will be that separation? → $2mp/L$

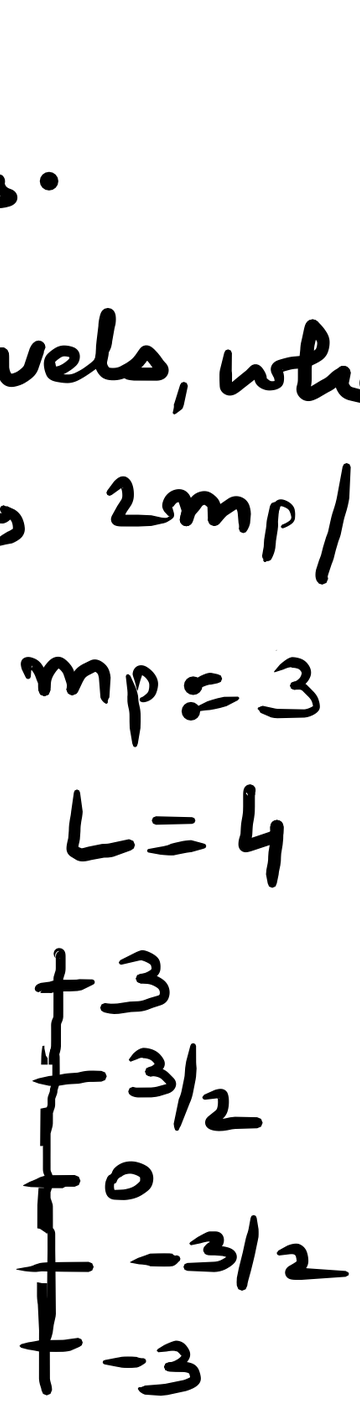
L → levels imply L baskets from $-mp$ to mp.

$mp = 3$

$L = 4$



$m \rightarrow 1.3$



first, we find that $m = 1.3$ falls in the basket $[0, 3/2)$, then we check if $1.3 \geq \frac{0+3/2}{2} = 3/4 \gtrless 3/2$

< 0

$\frac{2mp}{L} = \frac{2 \times 3}{4} = 3/2$

anything above m_p or below $-m_p$ is truncated to m_p & $-m_p$, respectively.

partition cell

$k = 1, 2 \cdots, L$

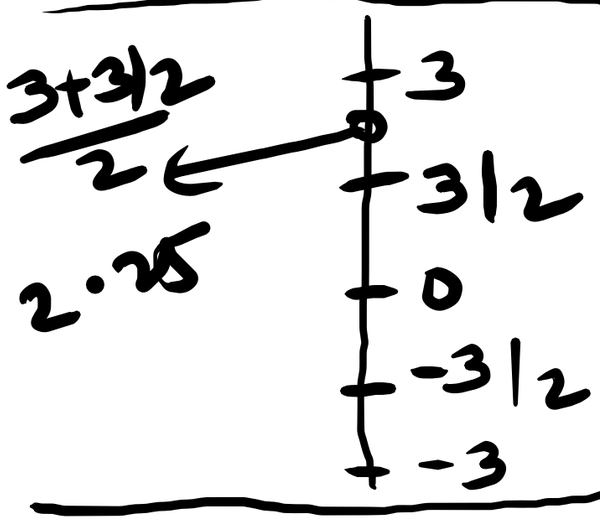
Few terms:-

m_k & m_{k+1} are the decision levels or thresholds.

cell & basket are the same

v_k :- are representation levels or reconstruction levels.

all amplitudes in $[m_k, m_{k+1})$ are rep. by v_k.



take $m = 3/2$, $g[m] = 2.25$

Spacing b/w two adjacent representation levels is called a quantum

or Stepsize.

mapping $V = g(m)$ is the quantizer characteristic, which is a stair-case function by definition.

Quantizers → Uniform – $(v_i - v_{i-1})$ same for all i.

→ Non-uniform – diff. for diff. i.

Quantizer charac. can be mid tread or mid rise.

(uniform)

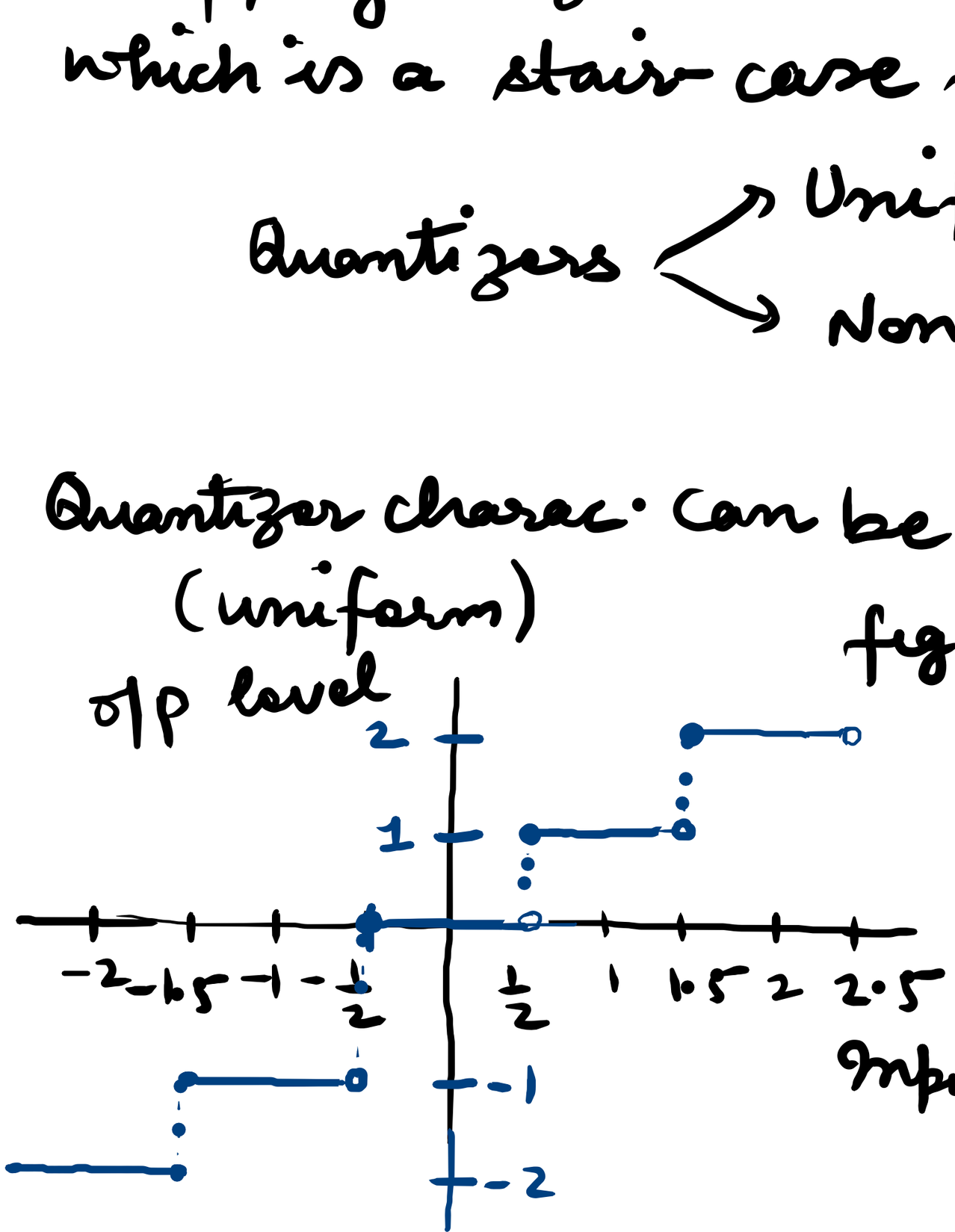


fig. 1

origin lies in the middle of a tread of the stair case like graph.

hence mid tread.

• → included ○ → excluded

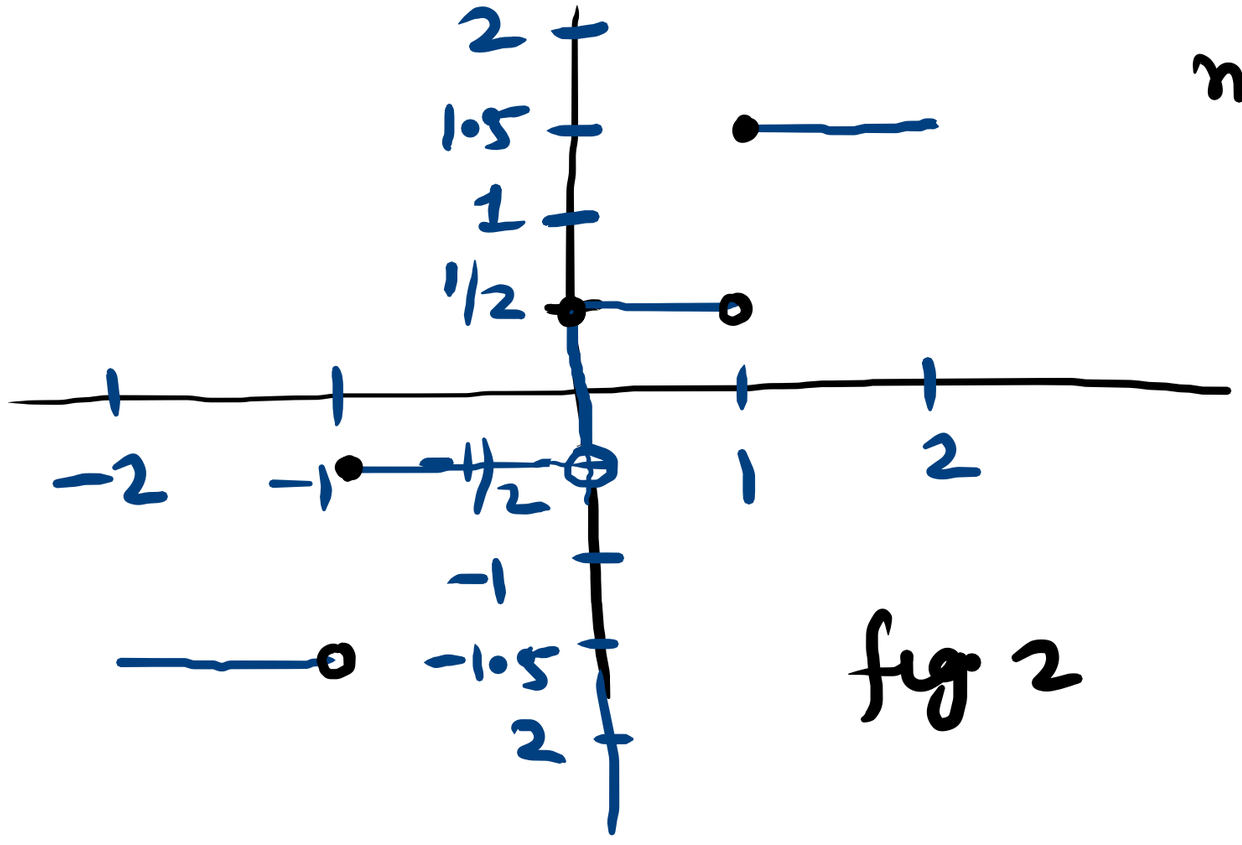


fig 2

midrisetype as origin lies in the middle of the rising part

Both midrise & midtread are symmetric about the origin.

(iv) the partition cell is denoted as J_k

$$[m_k, m_{k+1}) \qquad k = 1, 2, \ldots, L$$

The above figs 1 & 2 are for example only.