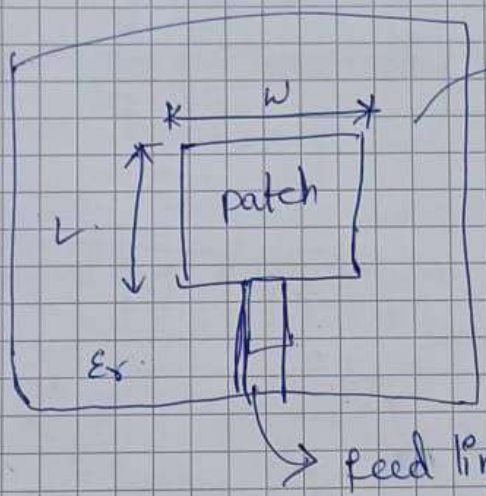
Microstrip patch antenna:

→ most widely used antenna

→ Low cost

→ patch (made of metal) and ground plane (made of metal)



→ Here length 'L' defines operating frequency of antenna

→ Consider 'L' and 'εr' defines operating frequency of εr

* 'W' width controls input impedance of patch

$$Z_{in} \propto \frac{1}{W}$$

↳ It also controls BW of path $BW \propto W$

→ The location of FED line defines the impedance matching of the microstrip antenna!

and if 'W' is ↑ radiation also increases

By shifting fed line w.r.t to patch, we can improve impedance matching (either left or Right shift)!

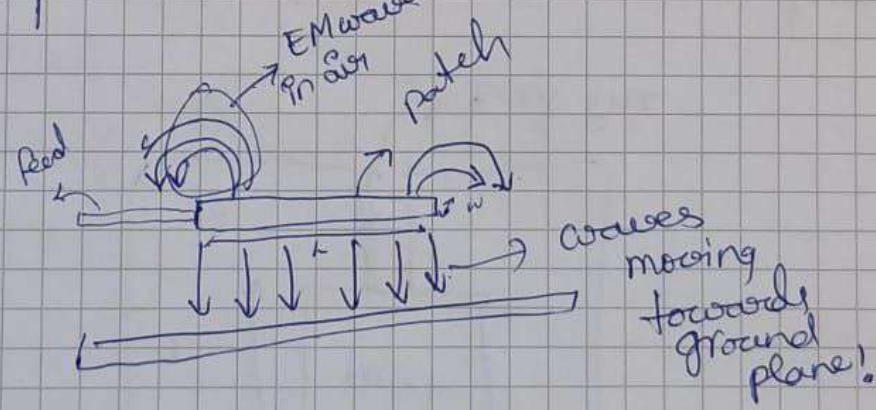
* The radiation of microstrip antenna happens from the side of W.
* ↑ W of microstrip antenna, higher the radiation
* Similarly as H↑, radiation also increases, but it is limited to 0.05λ ($H < 0.05\lambda$)

** After 0.05λ, the microstrip will stop to radiate, we need to take care of it!

Fringing effect:

→ Because of fringing effect, EM wave is radiated from patch antenna

→ It explains how wave are radiated into space/air



Fringing effect can be increased by

→ Lower value of ε_r

→ higher value of h

→ higher value of W