## SIMPLE ABSORBING BOUNDARY CONDITION IN 1D (ABC)

ABC ARE NEEDED TO PREVENT OUTGOING E AND H FIELDS TO REFLECT BACK INTO THE PROBLEM SPACE. FOR OUR STABILITY CONDITION WE USED

$$\Delta t = \frac{\Delta z}{2 c_0}$$

IN VACUUM, WE CAN SEE THAT, IN TERMS OF DISTANCE,

$$\text{DISTANCE} = \frac{\Delta z}{2} = c_0 \Delta t$$

THAT IS, TRAVELLING AT THE SPEED OF LIGHT, IN AN INTERVAL $\Delta t$, OUR WAVEFRONT WILL PROPAGATE ACROSS ½ CELL. SO IT WILL TAKE 2 TIME INTERVALS TO PROPAGATE THROUGH ONE CELL.

SO WE CAN USE:

$$E_x^n(k) = E_x^{n-2}(k+1)$$

AS A BOUNDARY CONDITION TO ABSORB A WAVE TRAVELLING TOWARDS THE LEFT, AND

$$E_x^n(k+1) = E_x^{n-2}(k)$$

AS A BOUNDARY CONDITION TO ABSORB A WAVE TRAVELLING TOWARDS THE RIGHT.

SEE EXAMPLE

FDTDABC.M (H)