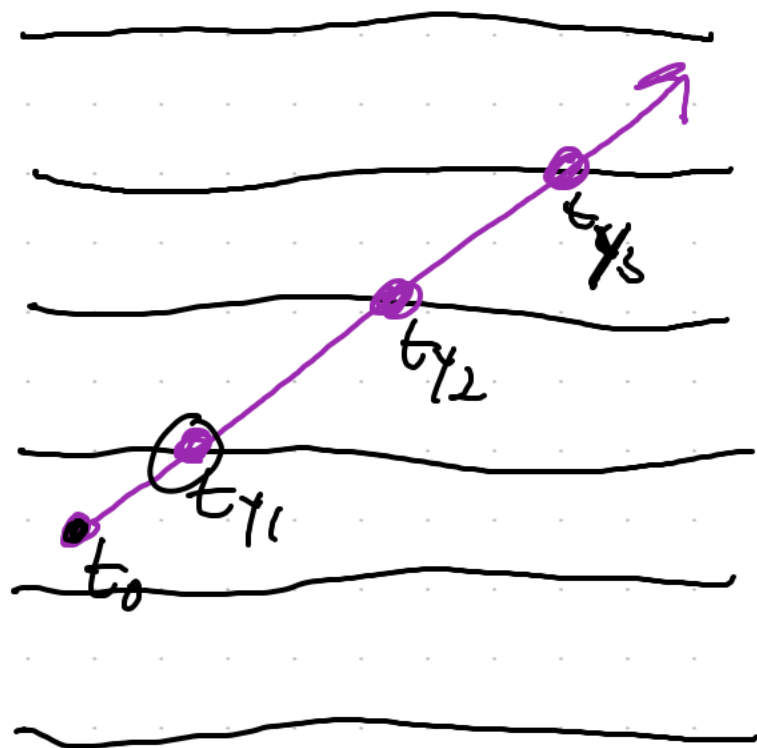
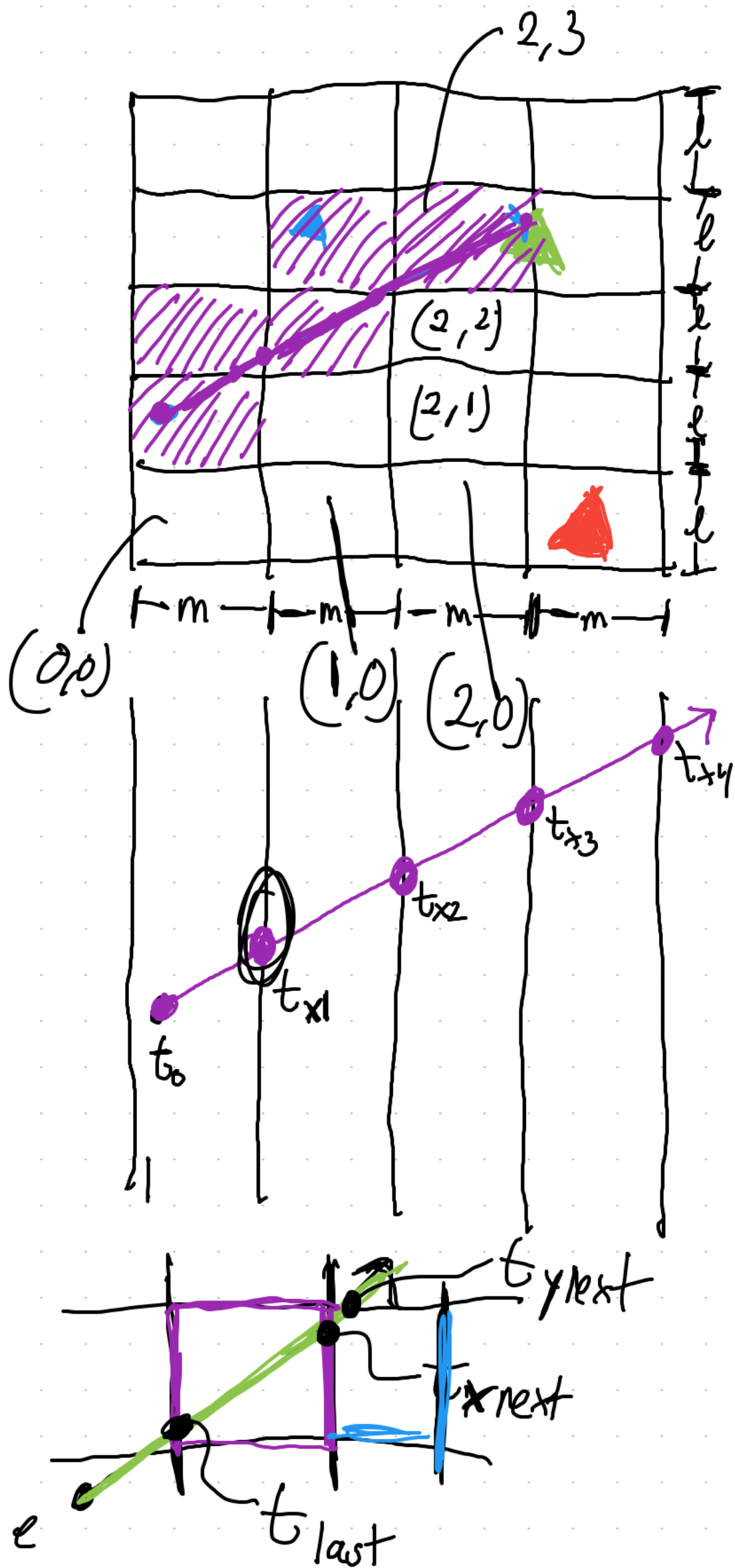


# Space Partitioning Scheme

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## Uniform spatial subdivision

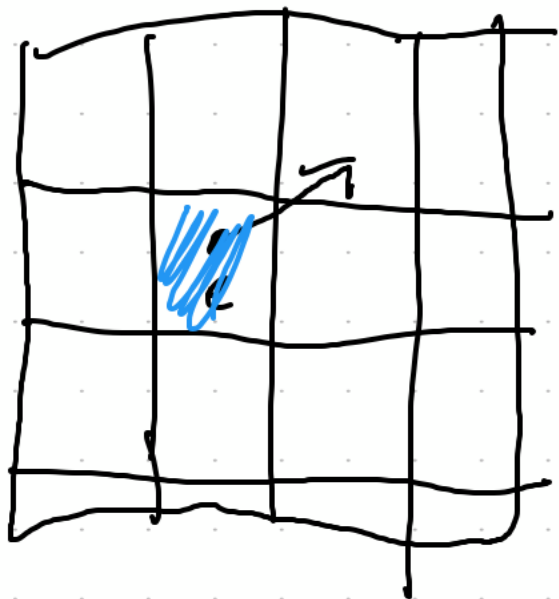


Index for each cell ✓  
 = store the current index  
Problem is find the next index that the ray passes through

Let  $t_{last}$  be the  $t$  of the last intersection

store  $t_{y_{next}}$  and  $t_{x_{next}}$   
 if  $t_{y_{next}} < t_{x_{next}}$   
 advance in  $y$  (move "up")  
 compute next  $t_{y_{next}}$  in cell  
 else  $t_{x_{next}} \leq t_{y_{next}}$   
 advance in  $x$  (move "over" a cell)  
 compute new  $t_{x_{next}}$

Find first cell



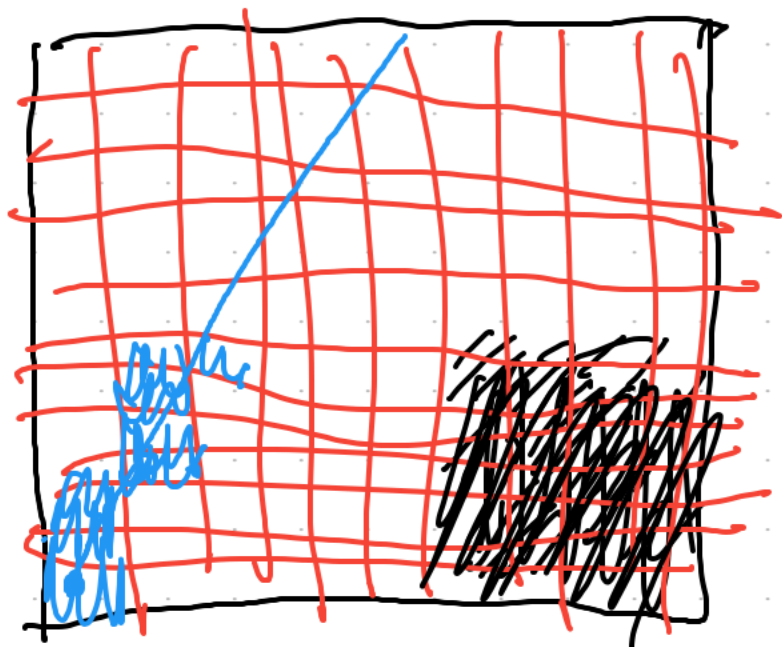
Point location on  $e$

1 0 1 1 1 2 3 4 5 | - - -  
0 1 1 1 1 2 3 4 5 | - - -

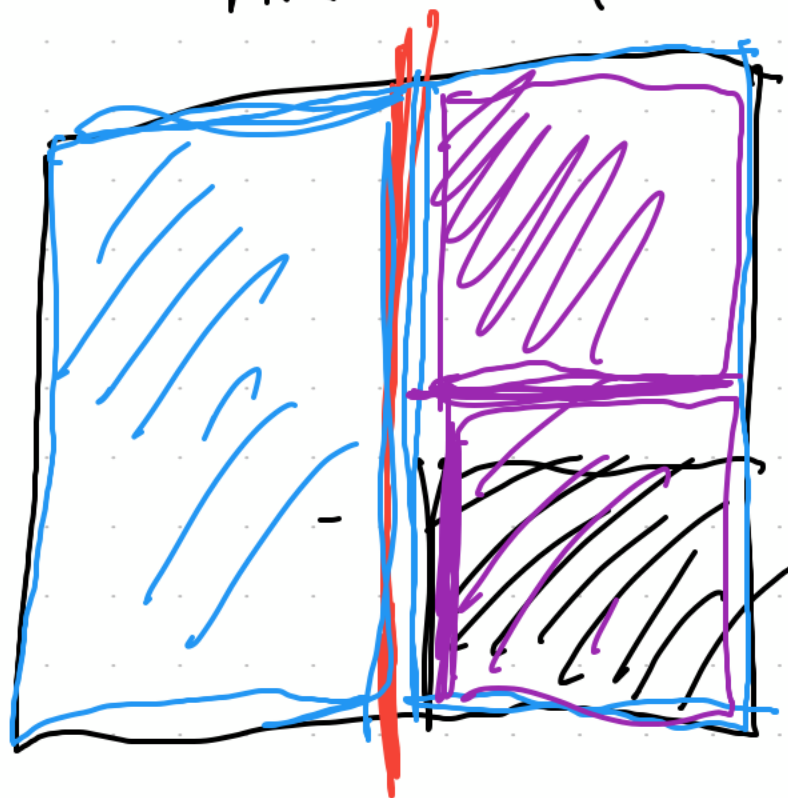
$\lfloor \frac{e_x}{w} \rfloor$  repeat for  $y$  &  $z$



uniform



hierarchical



# Axis Aligned Binary Space Partition

- store a tree
- each node
  - "left" child
  - "right" child
  - bounding box
  - cutting plane
  - dim (x, y, or z)
  - additional data (Δ's in bounding box)

