

# Point Location

Performance Of Trapezoidal Map

- Each Single Step

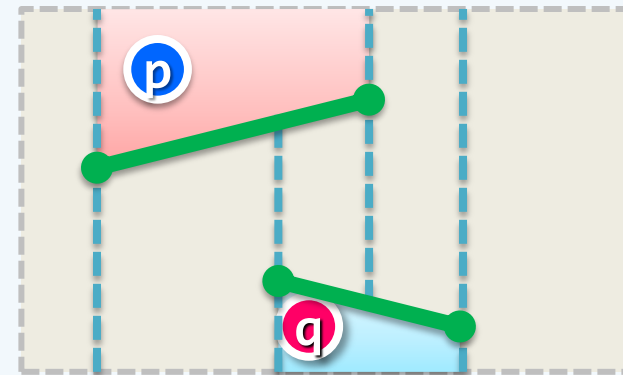
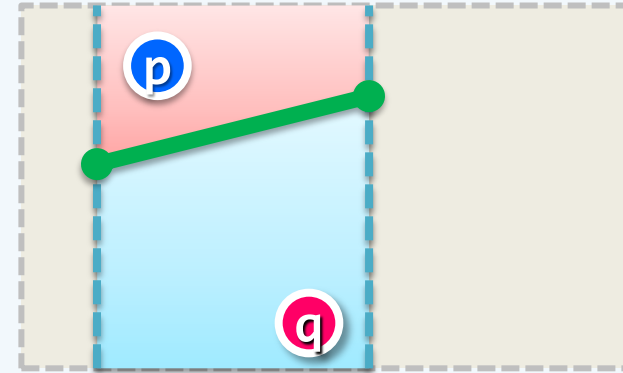
Junhui DENG

[deng@tsinghua.edu.cn](mailto:deng@tsinghua.edu.cn)

## Enclosing Trapezoid

❖ Let  $\Delta_k$  be  
the trapezoid of  $TM_k$   
that  $q$  lies in

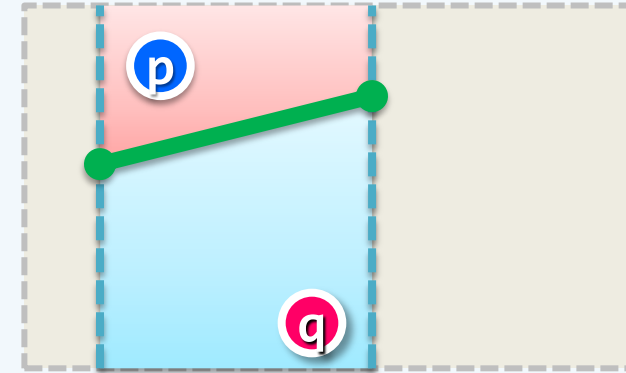
❖ There are two cases ...



## Changed Or Not

❖ If  $\Delta_k = \Delta_{k-1}$ , then

- the insertion of the  $k^{\text{th}}$  segment did not affect  $\Delta_{k-1}$  and therefore
- $q$  will remain where it was relative to  $SS_{k-1}$



❖ If  $\Delta_k \neq \Delta_{k-1}$ , then

- the insertion of the  $k^{\text{th}}$  segment cause  $\Delta_{k-1}$  to be removed and therefore
- $q$  must be located w.r.t. the newly created trapezoids that overlap  $\Delta_{k-1}$

