

# Voronoi Diagram

Plane Sweep

- Beach Line

Junhui DENG

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

## Beach Line

- ❖ Consists of points that are **equidistant** from the **SL** and the (nearest) **sites** above the SL
- ❖ The BL intersects each vertical line at 1 and only 1 point
- ❖ It follows that BL is always **x-monotone**



## Frozen = Determined = Unchangeable

❖ Consider any point inside the **frozen region**

- Its closest site(s) must lie **above** the SL, and hence
- it can't be affected by sites **below** the SL
- The cell it belongs to is determined

❖ The portion of VD inside the **frozen region**

is thus determined,  
regardless of what sites are still  
to appear **below** the SL

