Voronoi Diagram

Plane Sweep

- Circle Event: Why

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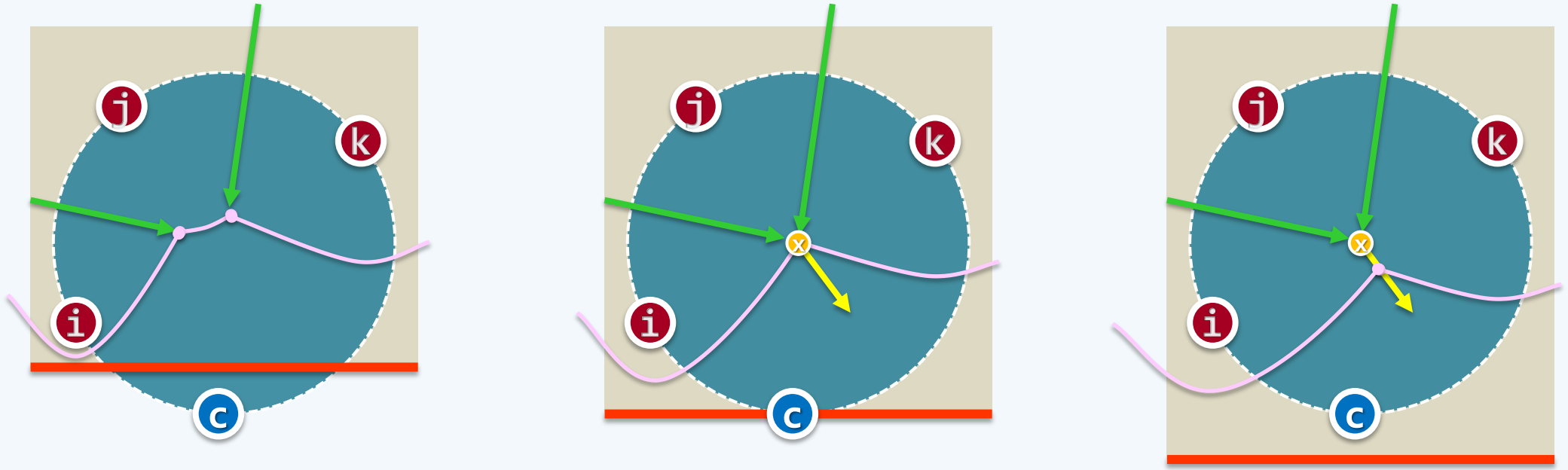
Empty Disk

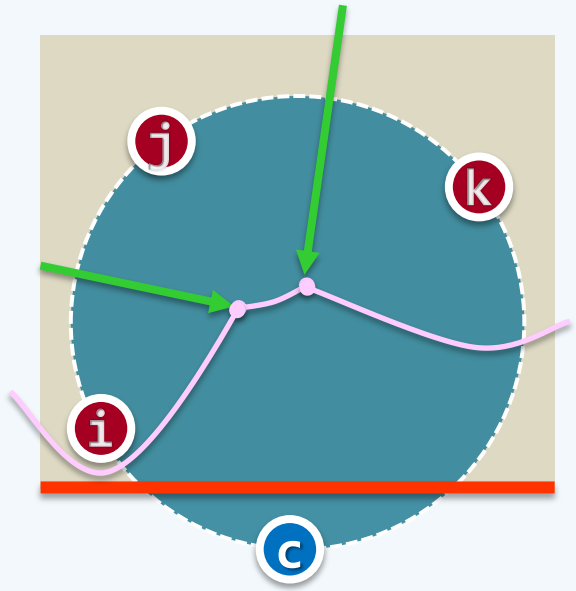
- Obviously, the circumcircle contains no sites above the current SL
- And if it contains no sites at all ...
- ... there should be a vertex x at its center

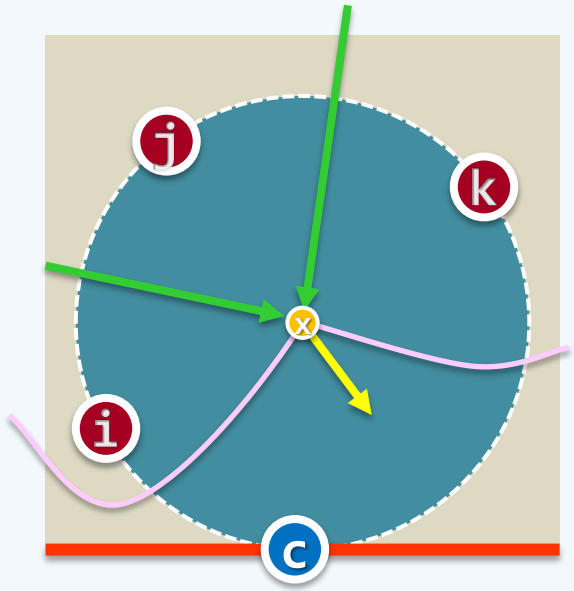


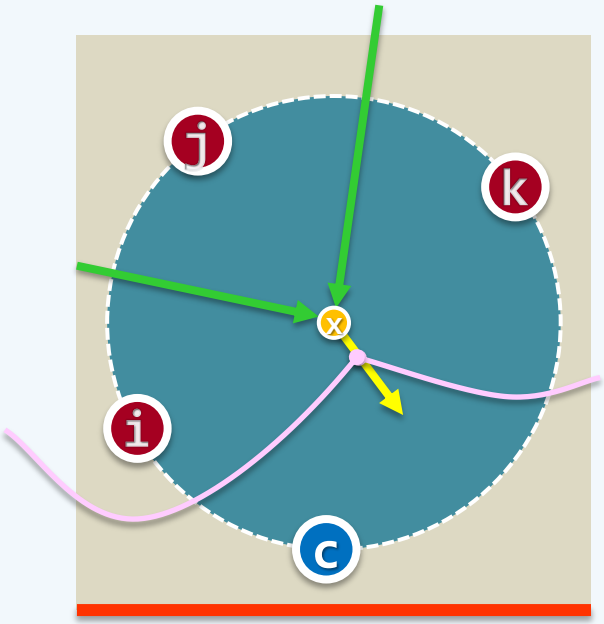
Paradox

❖ How to determine whether or not the circumcircle is empty

before having completed scanning it?







❖ Consider the moment when the SL touches a circle event c ...

- All the 3 parabolic arcs are passing thru the center x
- By x-monotonicity, arc(j) will henceforth vanish from the BL
- The bisector(i, j) and bisector(j, k)

  meet at x and

  merge into a single bisector(i, k)

❖ As we can see, circle events guarantee

the creation of potential Voronoi vertices

while avoiding the backtrack of the SL