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Point Location

Kirkpatrick Structure

- Construction Of Independent Subset

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Algorithm

❖ Consider the $\left\lceil \frac{n}{3} \right\rceil$ vertices with a degree no more than 8

Such an IS can be constructed incrementally ...

❖ Check all the n vertices one by one

- Ignore those with a degree of 9 or more
- Otherwise, > add the vertex to IS and

> remove its ≤8 neighbors

❖ As a result, at least $\left\lceil \frac{n}{3} \right\rceil / (1+8) = \left\lceil \frac{n}{27} \right\rceil$ vertices

will be added into the IS

Kirkpatrick, 1983

❖ For each triangulation with n vertices

there is an independent set

- with at least $\left\lceil \frac{n}{18} \right\rceil$ vertices,
- each of which has a degree of no more than $\boxed{8}$, and
- such an independent set can be found in $\boxed{O(n)}$ time