

Notes for Final Exam P6

Solution:

The algorithm is simply to assign each node to a random partition. To analyze the size of the cut, consider any edge (u, v) . The probability it is cut = $1 - (\text{probability } u \text{ and } v \text{ are in the same partition}) = 1 - (k * \frac{1}{k^2}) = 1 - \frac{1}{k}$. The last equality follows because for any partition V_i , u and v are both assigned to V_i with probability $\frac{1}{k^2}$, and there are k partitions in total. Thus, each edge is cut with probability $1 - \frac{1}{k}$, and so the expected total number of edges cut is $(1 - \frac{1}{k})|E| = \frac{k-1}{k}|E|$. Since the maximum number of edges cut is $|E|$, this shows the algorithm produces a $\frac{k-1}{k}$ approximation.

exam

Updated 5 months ago by 祖伟钦

followup discussions *for lingering questions and comments*