

Topic 19: Community Detection

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Key points: .

Disclaimer: *The note is built on Prof. [Jinchi Lv](#)'s lectures of the course at USC, DSO 607, High-Dimensional Statistics and Big Data Problems.*

19.1 Stochastic Block Model

Consider an undirected graph G , with nodes V and edges E . Let

- n be a positive integer: the number of **vertices**
- k be a positive integer: the number of **communities**
- $p = (p_1, \dots, p_k)$ be a probability vector on $\{1, \dots, k\} := [k]$: the prior on the k communities

Definition 19.1.1: Stochastic Block Model