

Preferential attachment.

The preferential attachment effect can be observed ~~globally~~ ^{directly} over the global network, or ~~locally~~ ^{indirectly} on ~~each~~ ^{local} level classes.

X.1 Global preferential attachment

~~these models~~ Stochastic block models lead to the ~~same~~ following generative process for links:

- For each node i , $1 \leq i \leq N$:
- For each node j , $1 \leq j \leq N$: generate a link between i and j with probability $P_{ij} = 1/N$

where N is either M or M_g .

The above process, for any given node i , considers all nodes in turn, from node 1 to node N . The indexing, i.e. the mapping between nodes and integers in $[1..N]$, is however arbitrary and the results that follow are stated for all possible indexings.

For a given node i , at step p of the above process, p nodes, from node 1 to node p , have been considered and links from these nodes to node i generated or not. We will denote by $d_i^{(p)}$ the degree of node i , i.e. the number of links of node i , at the p th step of this generative definition:

$$d_i^{(p)} = \sum_{j=1}^p y_{ij}$$

For simplicity in the notation, we consider that nodes can be linked to themselves. Excluding such links does not pose particular problems.