

Abstract Submitted
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A dynamic model explaining degree distribution in collaboration networks¹ DA-REN HE, Yangzhou University, PEI-PEI ZHANG, Jiangsu University, BEI-BEI SU, HUI CHANG, YUE-PING ZHOU, Yangzhou University — We suggest a simplified model and try to explain our statistical results about some collaboration networks. Following Barabasi and Albert [1] and J. J. Ramasco et. al. [2], we suppose that a new node is added in each time step. It connects with T-1 old nodes and forms a new complete graph (an act) including T nodes. The old nodes are selected by a linear-preferential rule according to the node's bridge coefficient (how many collaboration acts a node takes part in). With this model it is easy to obtain a power-law bridge coefficient distribution. Since every act contains exactly the same number of nodes, T, in this simplified model, the degree distribution must show a same power-law distribution. When the old nodes are selected randomly, one obtains an exponential bridge coefficient distribution and a same degree distribution. When the old nodes are selected part randomly and part linear-preferentially, one obtains the two degree distributions between exponential and power-law cases. Numerical simulation results show very good agreement with the analytic ones. [1] A-L Barabasi and R. Albert, Science1999286509. [2] J. J. Ramasco et. al., Phys. Rev. E 70, 036106 (2004).

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