Characteristics of the World Scientific Collaboration Network

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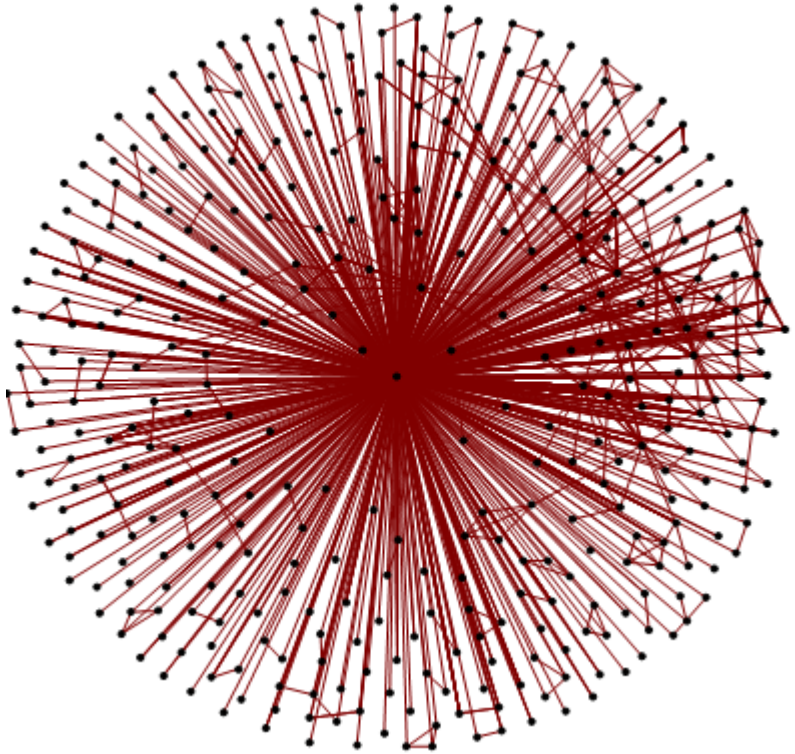
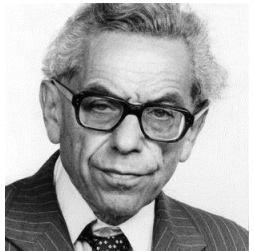
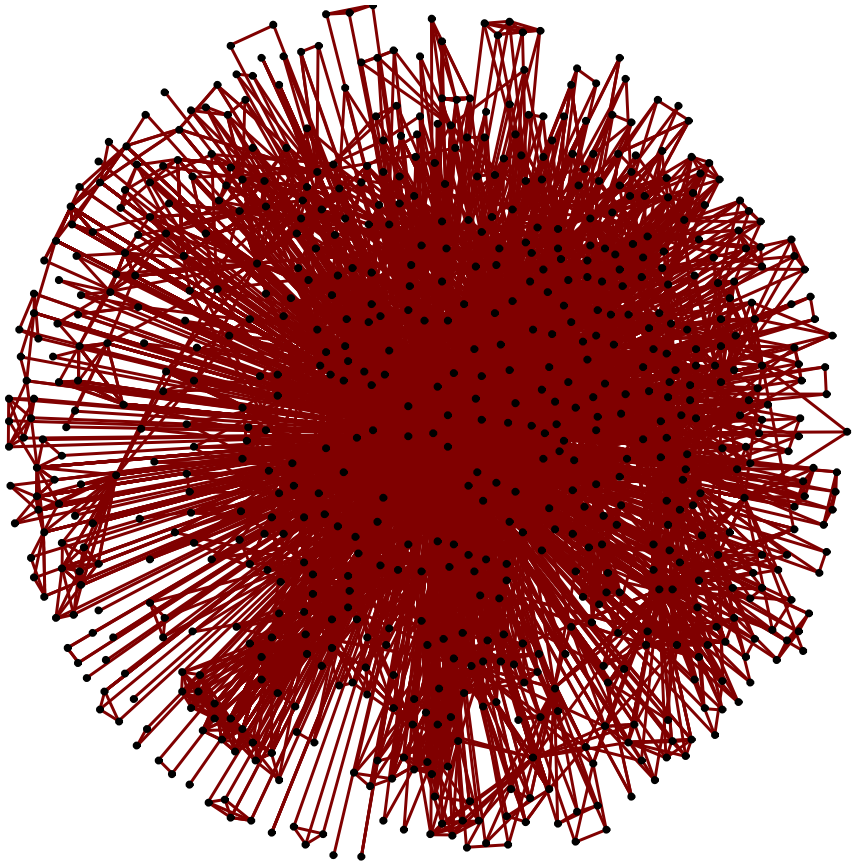
Exact science

P. Erdös $h_{index} = 46$

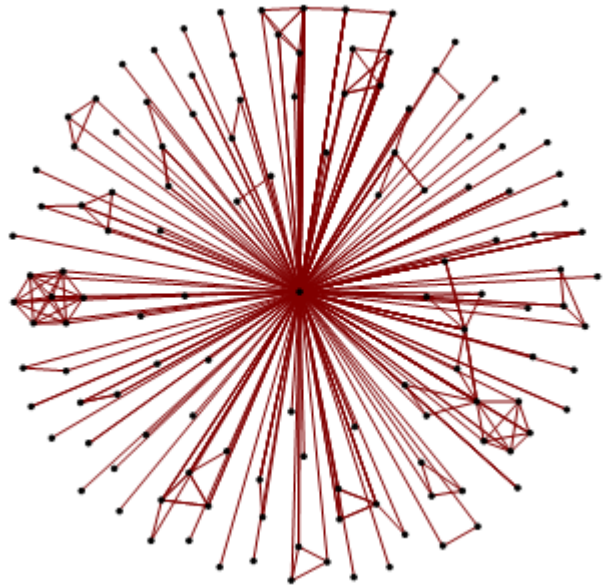




H.E. Stanley $h_{index} = 123$



E. Witten $h_{index} = 131$



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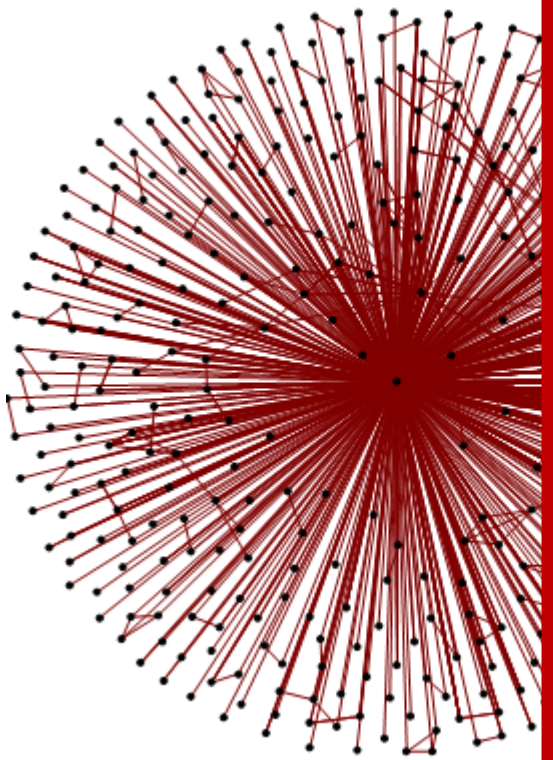
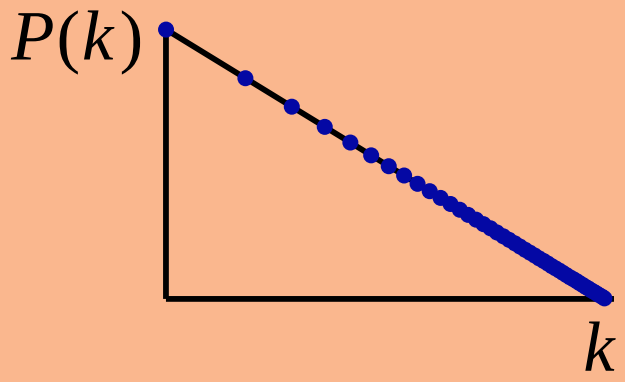
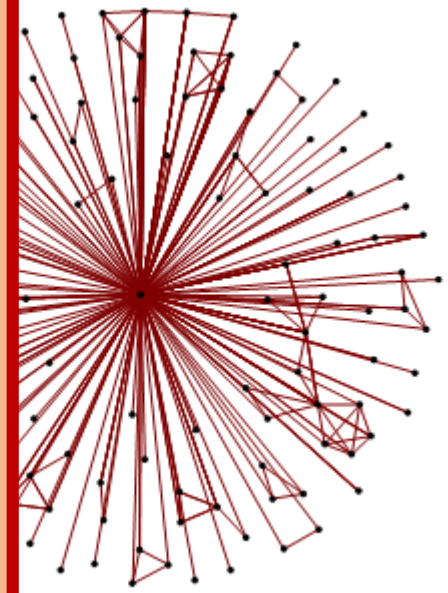
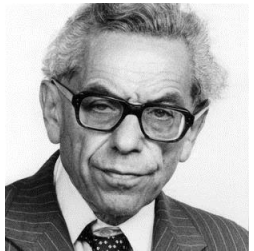


Degree distribution

$$\frac{\partial k_i}{\partial t} = m\frac{k_i}{\sum_j k_j} \qquad P(k) \propto k^{-\gamma} \qquad 2 \le \gamma \le 3$$







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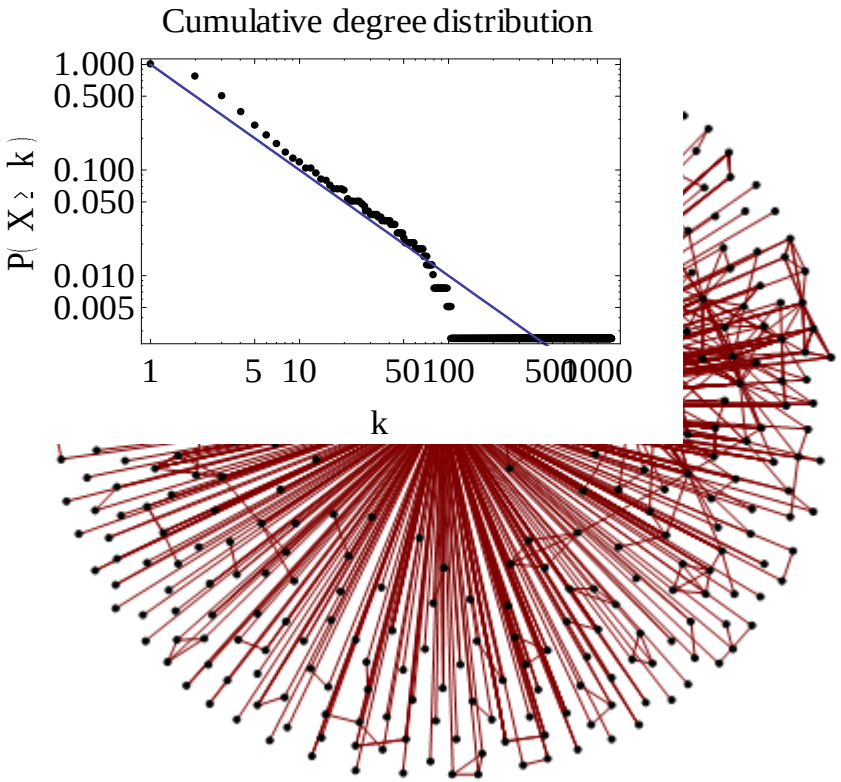

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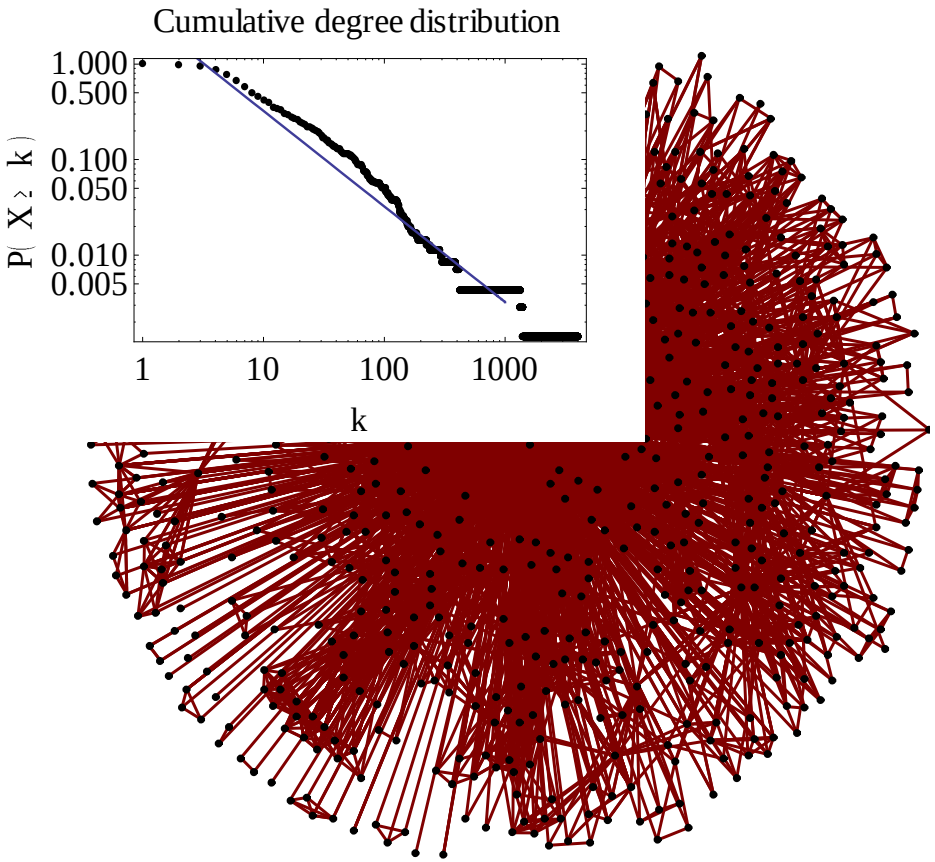

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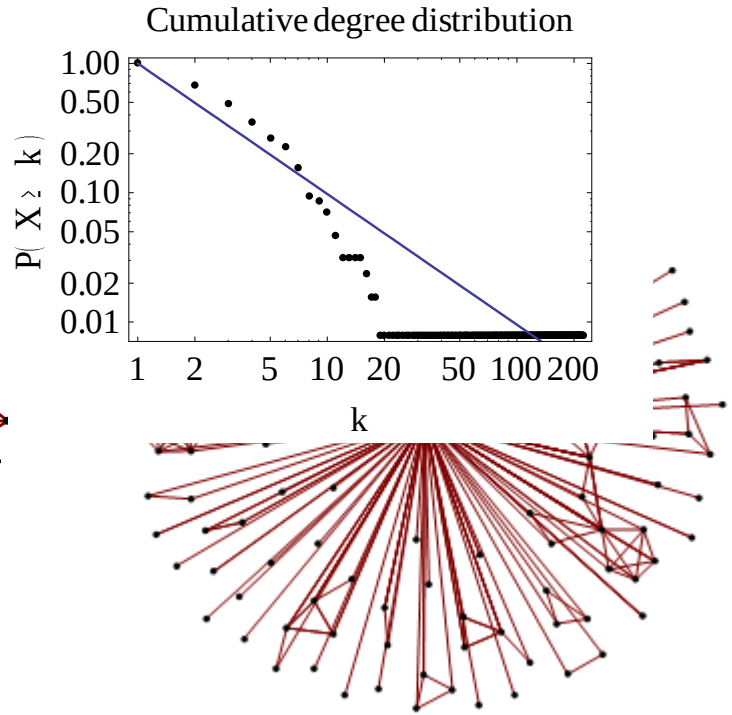

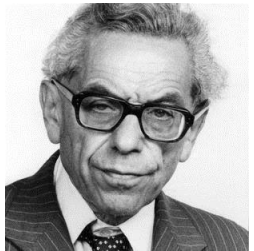

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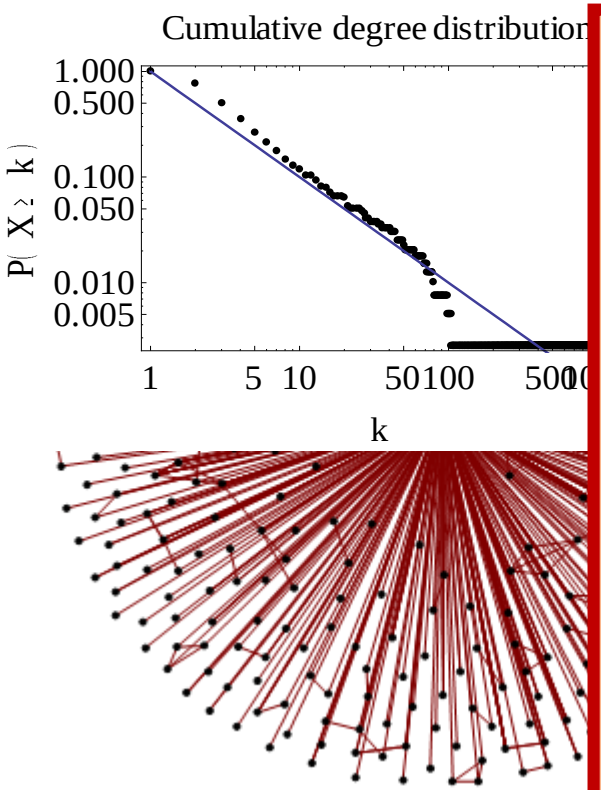
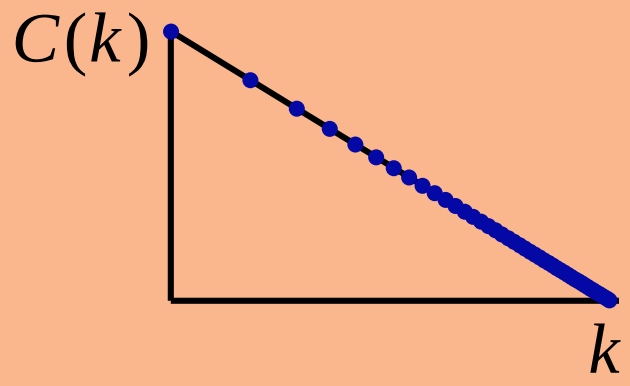
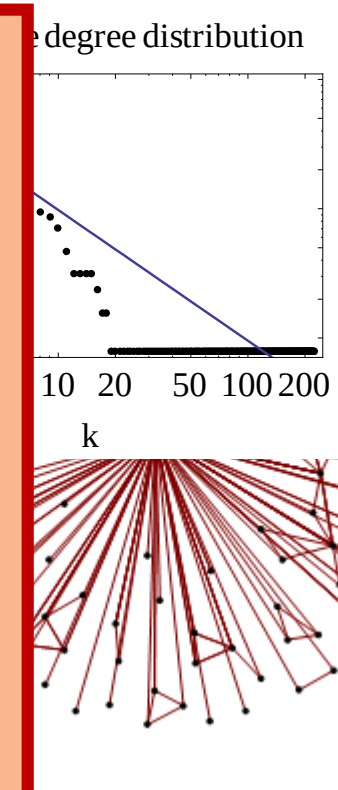
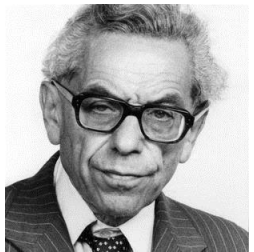


Clustering coefficient

$$C_i = \frac{2E_i}{k_i(k_i - 1)} \qquad C(k) \propto k^{-\lambda} \qquad \lambda \approx 1$$







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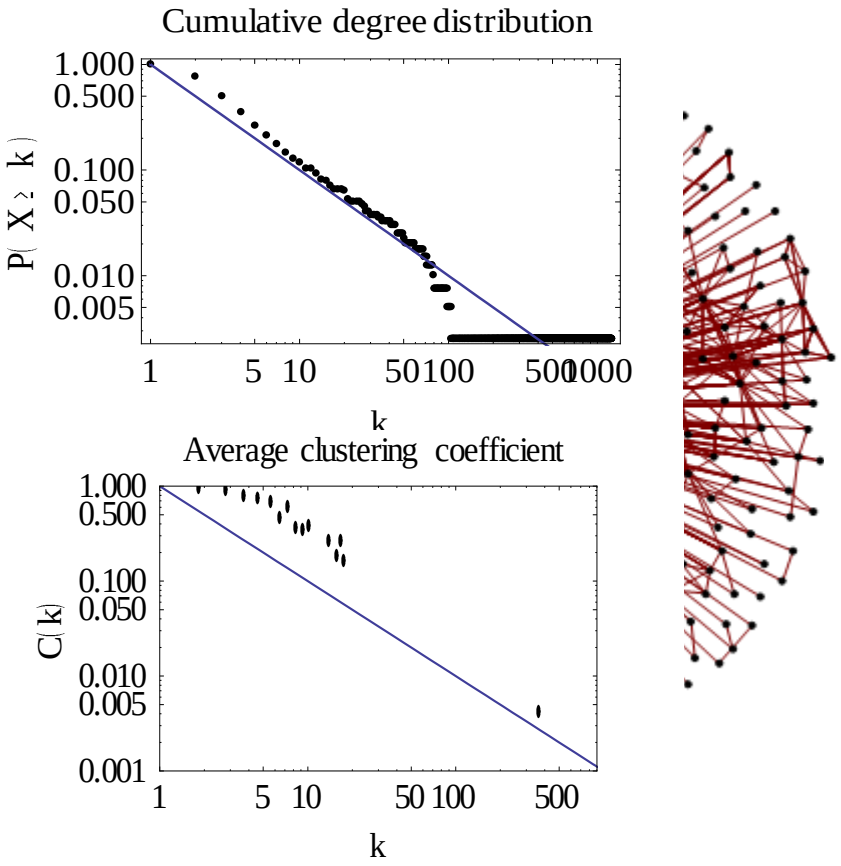

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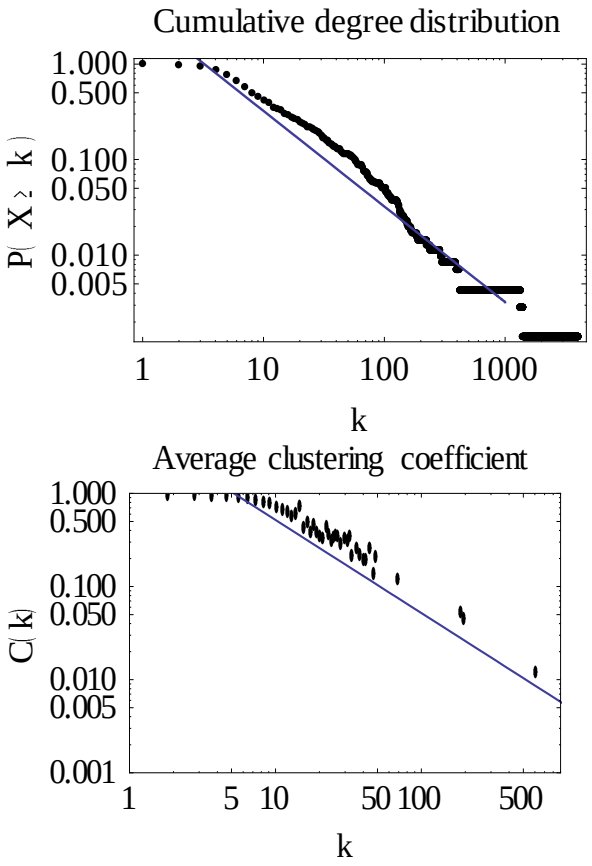

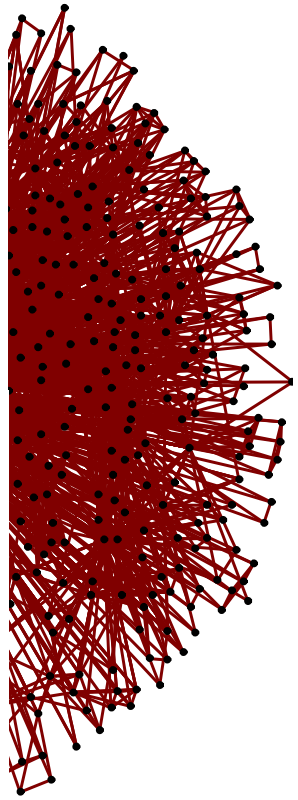

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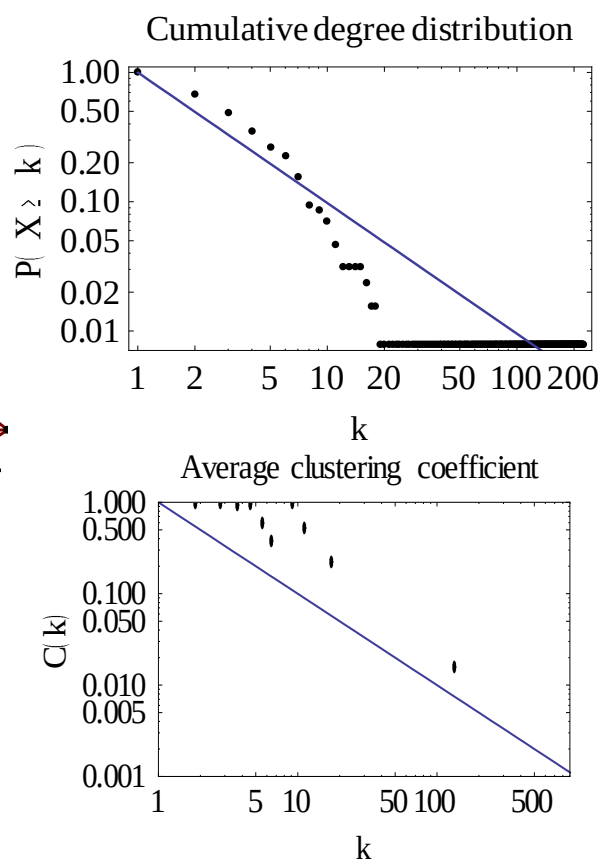

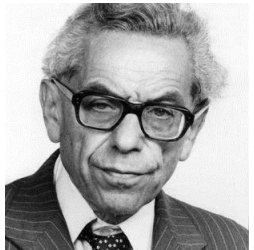

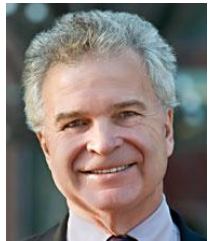

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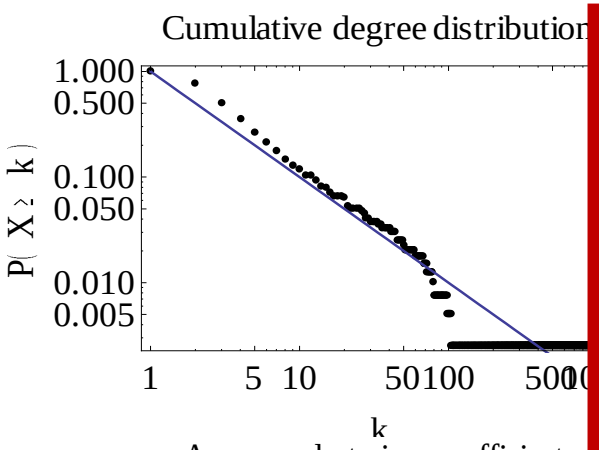

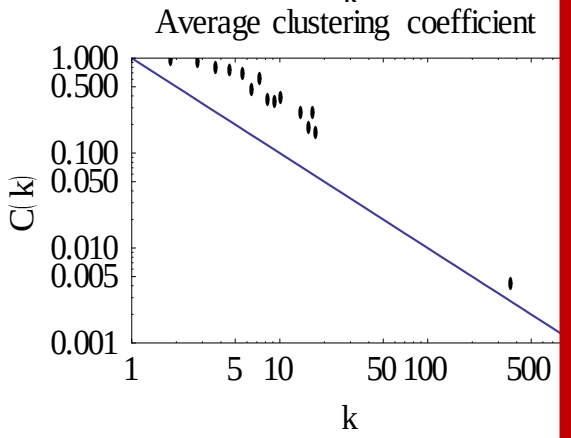

Main conclusions:

a new bibliometric measure

complex networks approach
gives a lot of useful information

most collaboration networks
have a hierarchical structure