Universal aspects of distances in power-law random graphs

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In the past decade, many examples have been found of real networks that have small distances combined with power-law degree sequences. As a result, a large number of models have been invented to model such networks and/or explain their topological structure. Paradigm examples of such random graph models are inhomogeneous random graphs, the configuration model and various preferential attachment models.

More recently, distances in such graphs have been investigated. Interestingly, while the picture is still far from complete, it has been found that, to a certain extent, the distances in these models are universal. Indeed, many different models share similar graph distances, as long as their degree sequences have equal power law exponent. The results suggest that distances in graphs of n vertices are of the order $\log n$ when the degree power-law exponent is larger than 3, and $\log\log n$ when it is in (2,3). In this talk, we shall discuss these distance results.

This is joint work with Gerard Hooghiemstra, Henri van den Esker and Dmitri Znamenski.

List of invited speakers Schedule for December 12