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Why complex networks have logarithmic diameters?

We present a new technique for proving logarithmic upper bounds for diameters of evolving random graph models, which is based on defining a coupling between random graphs and variants of random recursive trees. This technique is quite simple and provides short proofs, is applicable to a broad variety of models including those incorporating preferential attachment, and provides bounds with small constants. We illustrate this by proving logarithmic upper bounds for diameters of the following well-known models: forest fire model, copying model, PageRank-based selection model, Aiello-Chung-Lu models, generalized linear preference model, directed scale-free graphs, Cooper-Frieze model, and random unordered increasing k -trees.