1164-60-49 **Miklos Z. Racz*** (mracz@princeton.edu). *Correlated randomly growing graphs.*

I will introduce a new model of correlated randomly growing graphs and discuss the questions of detecting correlation and estimating aspects of the correlated structure. The model is simple and starts with any model of randomly growing graphs, such as uniform attachment (UA) or preferential attachment (PA). Given such a model, a pair of graphs (G_1, G_2) is grown in two stages: until time $t_\star$ they are grown together (i.e., $G_1 = G_2$), after which they grow independently according to the underlying model.

We show that whenever the seed graph has an influence in the underlying graph growth model—this has been shown for PA and UA trees and is conjectured to hold broadly—then correlation can be detected in this model, even if the graphs are grown together for just a single time step. We also give a general sufficient condition (which holds for PA and UA trees) under which detection is possible with probability going to 1 as $t_\star \to \infty$. Finally, we show for PA and UA trees that the amount of correlation, measured by $t_\star$, can be estimated with vanishing relative error as $t_\star \to \infty$.

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