

Combinatorics Seminar

Friday November 16, 2012 at 2PM

Room MS.03

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Generating functions of connected and 2-connected graphs, and the virial expansion of statistical mechanics

In statistical mechanics, the cluster expansion allows to write the pressure as a weighted generating function of connected graphs. The density is a weighted connected function of rooted connected graphs. One would like to write the pressure as power series of the density. This is the virial expansion, and it turns out that it is related to the generating function of 2-connected graphs. This was understood by physicists in the 1930's already. These questions are still relevant, though, both in statistical mechanics and in combinatorics. The radii of convergence are related to the question of phase transitions.



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