

Problems at the interface of discrete mathematics and statistical physics

Organizer:

David Galvin (University of Pennsylvania)

Description:

There has been great activity in recent years at the interface of discrete mathematics, theoretical computer science and statistical physics. Researchers in these disparate fields studying graph enumeration, percolation problems, efficiency of approximation and sampling algorithms, and phase transitions in spin-models, have been discovering connections that have enriched all three disciplines. This minisymposium gathers together workers whose recent activity has been inspired by this cross-fertilization, and hopes to demonstrate that each of these three disciplines can make meaningful contributions to the other two.

Titles and Speakers:

- *Counting matchings and independent sets of a fixed size*
David Galvin (University of Pennsylvania)
- *Correlation decay in statistical physics and applications to counting problems*
David Gamarnik (Massachusetts Institute of Technology)
- *A rigorous analysis of the Cavity Method for counting matchings*
Mohsen Bayati (Stanford University)
- *Spectral Radius, Dobrushin Uniqueness and Rapid Mixing*
Tom Hayes (Toyota Technological Institute)
- *First-passage percolation on a width-2 strip and the path cost in a VCG auction*
Abraham Flaxman (Microsoft Research)