EXPANSION FOR GROUP ACTIONS, INDEPENDENT SETS, AND PERFECT MATCHINGS

RUSSELL LYONS

Just as Cheeger's inequality relating spectral gap and isoperimetric constants for manifolds has an analogue for graphs, so it has an analogue for an action of a group preserving a probability measure. In the case of Bernoulli actions, one can determine the spectral gap. This allows one to analyze when certain combinatorial constructions are possible as factors of IID random variables. (Joint work with Fedja Nazarov.)