

Title: Unimodular Galton–Watson treeings and irregular Ramanujan graphs

Abstract:

We study the  $L^2$  spectral radius of the random walk operator on graphings, specifically the skeleton treeing of the Unimodular Galton-Watson tree, and prove that it coincides with the  $\ell^2$  spectral radius of the componentwise Markov operator. One can use this result to extend Friedman's theorem on the second largest eigenvalues of random  $d$ -regular graphs to the irregular case. A key ingredient to our work is understanding regenerations of random walks on regular trees. Ongoing joint work with Charles Bordenave.