

1059-60-80

Soumik Pal* (soumikpal@gmail.com), C-547 Padelford Hall, University of Washington, Seattle, WA 98195. *Spectral properties of large regular random graphs.*

Regular random graphs are important models in probabilistic combinatorics and have sustained interest for decades. Recent theory, spurred in part by the study of Expanders, have focussed on spectral properties of the adjacency matrices of a sequence of regular random graphs with a fixed degree and a growing number of vertices (order). A striking example in this vein is the celebrated proof of the Alon Conjecture by Joel Friedman. We will talk about the case when the degree also grows, albeit slowly, with the order. Although the graphs remain sparse, their spectral properties begin to resemble those of the Gaussian Orthogonal Ensemble, or real Wigner matrices. This can be seen in the convergence of the empirical spectral distribution to the semicircular law and theorems that indicate that their eigenvectors are approximately uniformly distributed over the sphere. This is consistent with already existing empirical evidence of spectral properties of regular random graphs of "not-small" degrees. Our methods are a combination of analytical tools such as Stieltjes transforms and combinatorial ideas such as local tree approximation. This is based on joint work with Ioana Dumitriu. (Received February 17, 2010)