

Nodal domains of Erdős-Rényi random graphs

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A nodal domain of a graph is a connected component of an eigenvector of its Laplacian. Nodal domains of compact manifolds are classical objects in geometry, and their number typically increases as the eigenvalue increases. About 12 years ago, Dekel, Lee, and Linial showed that in contrast to the manifolds, the number of nodal domains of a $G(n,p)$ graph remains constant with high probability. In this talk, we will discuss how the properties of nodal domains are related to delocalization of eigenvectors, and show that the positive and the negative nodal domains of a $G(n,p)$ graph have almost the same size with high probability.

Joint work with Han Huang.