Spectral Phases of Erdős–Rényi graphs

Abstract:

We consider the Erdős–Rényi graph on N vertices with edge probability d/N. It is well known that the structure of this graph changes drastically when d is of order log N. Below this threshold it develops inhomogeneities which lead to the emergence of localized eigenvectors, while the majority of eigenvectors remains delocalized. In this talk, I will present the phase diagram depicting these localized and delocalized phases and our recent progress in establishing it rigorously.

This is based on joint works with Raphael Ducatez and Antti Knowles.