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Scaling Theory of the Anderson Transition in Random Graphs: Ergodicity and Universality

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Recently, there has been a huge interest in the Anderson transition in random graphs. In such systems, the existence of a non-ergodic delocalized phase showing multifractality in the thermodynamic limit is hotly debated. This problem has proven to be especially difficult to investigate because of non trivial finite-size effects. We provide a scaling theory describing these systems, based on large scale numerical simulations and refined finite-size scaling analysis. This allows us to give a precise answer to the controversy about the non-ergodic phase for a large class of systems.
