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Scale-free percolation

The talk is concerned with a model for inhomogeneous long-range percolation on $\mathbb{Z}^d$ with potential applications in network modeling. Each vertex is independently assigned a non-negative random weight and the probability that there is an edge between two given vertices is then determined by a certain function of their weights and of the distance between them. The results concern the degree distribution in the resulting graph, the percolation properties of the graph and the graph distance between remote pairs of vertices. The model interpolates between long-range percolation and inhomogeneous random graphs, and is shown to inherit interesting features of both these model classes.