Dynamical and near-critical percolation

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In one of several mathematical models of percolation, the edges (or sites) of a lattice are selected with some probability p, independently, and the connectivity properties of the resulting graph are studied. There is a critical value p_c, such that when $p > p_c$ there is with probability one an infinite connected component in the percolation subgraph and when $p < p_c$, the probability for an infinite component is zero. In dynamical peroclation, the bits determining the percolation configuration switch on and off according to Poisson clocks, independently. We will describe some recent results concerning dynamical and near-critical percolation on two-dimensional lattices, as well as applications to the theory minimal spanning trees in two dimensions.