Title:

The window process of slightly subcritical frozen percolation

Abstract:

The mean field frozen percolation process is a dynamic random graph model which starts with the empty graph on N vertices, an edge between a pair of vertices is added at rate 1/N and connected components of size k are deleted at rate r * k, where r = r(N) is a constant that depends on N. This model is known to exhibit self-organized criticality when 1 << N and 1/N << r(N) << 1, i.e., the dynamics keep the graph in a state which is essentially a near-critical critical Erdős-Rényi graph. One defines the window process w(t) = A(t) * t / N, where A(t) is the number of vertices alive at time t. We derive scaling limits for the time evolution of w(t) when r(N) = n^a for some -1/3 < a < 0, thus giving a detailed picture of the mechanism that produces the self-organized criticality of the model. Joint work with Márton Szőke (BME) and Dominic Yeo (King's College London).