On percolation on random graphs with given degrees

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In this talk we revisit the analysis of a bond percolation process on a random graph with given degrees. In this setting, a random graph is sampled uniformly at random from the set of all graphs with a given degree sequence and, thereafter, its edges are deleted randomly and independently with probability $1 - p$. The question we consider is whether there a critical value p_c for the probability p, such that when p crosses p_c a giant component emerges. We will give a rough characterisation of which degree sequences have such a critical value that is bounded away from 0, as the order of the random graph grows. To this end, we will avoid the use of the classic configuration model (and the restrictions it incurs), and use a recent approach developed by Joos, Perarnau, Rautenbach and Reed (Probability Theory and Related Fields, to appear - also in proceedings of FOCS '16) that deals with random graphs with given degrees which have no particular restrictions. (This is joint work with F. Joos and G. Perarnau.)