The size of the giant component in random hypergraphs

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One of the founding results in the theory of random graphs is the "phase transition" first proved by Erdős and Rényi: Briefly, up to a certain number of edges, the random graph on n vertices has only components of size $O(\log n)$, but with the insertion of just a few additional edges, a unique "giant" component of linear size appears.

Many further papers have appeared on this subject, offering new and simple proofs of the phase transition, as well as determining the distribution of the size of the giant, and many further results.

There are many possible generalisations of the phase transition result to hypergraphs. For all but the simplest generalisation, the phase transition was only proved recently (C., Kang, Person, 2014+). In this talk we present a result which builds on this work, as well as on ideas of Bollobás and Riordan (2012) for the graph case, to determine the asymptotic size of the giant component in random hypergraphs.

This is joint work with Mihyun Kang and Christoph Koch.