Resilience for Hamiltonicity in random hypergraphs

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Sudakov and Vu introduced the concept of local resilience of graphs for measuring robustness with respect to satisfying a given property. A classical result of Dirac states that any subgraph G of the complete graph on n vertices of minimum degree $n/2$ contains a Hamilton cycle. In the binomial random graph $G(n,p)$ the threshold for the appearance of a Hamilton cycle is $\log(n)/n$. Lee and Sudakov generalised Diracs result to random graphs by showing that with $p > C\log(n)/n$ asymptotically almost surely any subgraph G of $G(n,p)$ with minimum degree $(1/2+\epsilon)n$ contains a Hamilton cycle. These kind of resilience problems in random graphs received a lot of attention. In this talk we discuss a generalisation of the result of Lee and Sudakov to tight Hamilton cycles in random hypergraphs.

This is joint work with Peter Allen and Vincent Pfenninger.