

Bounded-degree spanning trees in randomly perturbed graphs

Matthew Kwan
ETH Zurich

We show that for any fixed dense graph G and bounded-degree tree T on the same number of vertices, a modest random perturbation of G will typically contain a copy of T . This combines the viewpoints of the well-studied problems of embedding trees into fixed dense graphs and into random graphs, and extends a sizeable body of existing research on randomly perturbed graphs.

Specifically, we show that there is $c = c(\alpha, \Delta)$ such that if G is an n -vertex graph with minimum degree at least αn , and T is an n -vertex tree with maximum degree at most Δ , then if we add cn uniformly random edges to G , the resulting graph will contain T with high probability. Our proof uses a lemma concerning the decomposition of a dense graph into super-regular pairs of comparable sizes, which may be of independent interest.

Time permitting, we will also discuss some other results concerning spanning substructures in randomly perturbed graphs and hypergraphs.

This is joint work with Michael Krivelevich and Benny Sudakov.