

K_t minors in large t -connected graphs

Date Tuesday, March 10

Time 5:30 pm

Location 507 Math

Abstract: A graph G contains a graph H as a minor if a graph isomorphic to H can be obtained from a subgraph of G by contracting edges. One of the central results of the rich theory of graph minors developed by Robertson and Seymour is an approximate description of graphs that do not contain a fixed graph as a minor. An exact description is only known in a few cases when the excluded minor is quite small.

In recent joint work with Robin Thomas we have proved a conjecture of his, giving an exact characterization of all large, t -connected graphs G that do not contain K_t , the complete graph on t vertices, as a minor. Namely, we have shown that for every integer t there exists an integer $N = N(t)$ such that a t -connected graph G on at least N vertices has no K_t minor if and only if G contains a set of at most $t - 5$ vertices whose deletion makes G planar. In this talk, I will describe the motivation behind this result, outline its proof and mention potential applications of our methods to other problems.