

Bichain graphs - geometric model, universal graphs, and cliquewidth

Date October 1

Time 3 pm

Location 303 Mudd

Abstract: A bipartite graph with a bipartition (A, B) is a bichain graph if A admits a partition (A_1, A_2) and B admits a partition (B_1, B_2) such that for $i = 1, 2$ the subgraphs $G \setminus A_i$ and $G \setminus B_i$ contain no induced pair of disjoint edges.

In the talk, we will discuss structural properties of bichain graphs. We will show that they are equivalent to intersection graphs of orthogonal segments connecting consecutive sides of a rectangle. Using this we will describe a construction of a universal family of bichain graphs. This will allow us to prove that bichain graphs are a minimal hereditary class of graphs of unbounded cliquewidth. Namely, the class itself has unbounded cliquewidth, but forbidding any single induced (bichain) subgraph yields a class of bounded cliquewidth. Only a few other examples of such graph classes are known.

Joint work with Robert Brignall (Open University) and Vadim Lozin (University of Warwick).