

Combinatorics Seminar

Friday November 23, 2012 at 2PM

Room MS.03

Oleg Verbitsky

(Humboldt-Universität zu Berlin)

Logical complexity of graphs

We discuss the definability of finite graphs in first-order logic with two relation symbols for adjacency and equality of vertices. The logical depth $D(G)$ of a graph G is equal to the minimum quantifier depth of a sentence defining G up to isomorphism. The logical width $W(G)$ is the minimum number of variables occurring in such a sentence. The logical length $L(G)$ is the length of a shortest defining sentence. We survey known estimates for these graph parameters and discuss their relations to other topics, with emphasis on the Weisfeiler-Lehman algorithm in isomorphism testing.



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