



MANHATTAN ALGEBRA DAY

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Amenability of Schreier Graphs and Strongly Generic Algorithms for the Conjugacy Problem

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3:20pm

Abstract:

In various occasions the conjugacy problem in finitely generated amalgamated products and HNN extensions can be decided efficiently for elements which cannot be conjugated into the base groups. Thus, the question arises "how many" such elements there are – a question which can be formalized using the notion of strongly generic sets and lower bounds can be proven by applying the theory of amenable graphs: We examine Schreier graphs of amalgamated products and HNN extensions and characterize when they are amenable. We give three applications to the conjugacy problem: in HNN extensions of free abelian groups with multiple stable letters, conjugacy can be solved in polynomial time on a strongly generic set. Furthermore, the conjugacy problem in groups with more than one end can be solved with a strongly generic algorithm which has essentially the same time complexity as the word problem. Finally, the conjugacy problem of the Baumslag group $G_{1,2}$ is strongly generically decidable in polynomial time.

Based on joint work with Volker Diekert and Alexei Miasnikov.