

“Group Theory International” Online Seminar

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“Stallings graphs for quasi-convex subgroups of automatic groups”

Thursday, November 14, noon (New York Time)

Abstract:

We show how to effectively compute a graphical representation for a finitely generated quasi-convex subgroup H of an automatic group G (e.g. a hyperbolic group, a right-angled Artin group etc.). Such representations, which are well-known for subgroups of free groups but also in a number of other situations (e.g. subgroups of amalgamated products of finite groups [Markus-Epstein, 2007] or of virtually free groups [Silva, Soler-Escriva, Ventura, 2011]), can be used to solve algorithmic problems such as computation of the intersection of finitely generated subgroups or, under appropriate hypotheses, decide whether H has finite index or whether it is malnormal.

We also discuss the complexity of computation of this graphical representation: there is no computable bound on the time required to compute it, given the automatic structure of G and a set of words generating H ; on the other hand, if we are given the quasi-convexity index k of H , then the computation can be performed in time at most exponential in k and the lengths of the generators.

This is joint work with Olga Kharlampovich and Alexei Miasnikov.

Next presentation: **Nov 28, Tara Brough (University of St Andrews)**