Welcome to Algebraic Cryptography Center Web Seminar

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" About the lattice of finitely generated subgroups of a free group "

October 29, 9:00am (New York Time).

Abstract:

It is well-known that the subgroups of a free group F are free, but a free group may sit in another in many different ways: e.g. as a finite-index subgroup, as a free factor. We will start with the consideration of Takahasi's theorem: a finitely generated subgroup H of F has a finite lattice of extensions, the so-called algebraic extensions, such that every every subgroup containing H is a free multiple of an algebraic extension. This is to say that a lot of the interesting extensions of H are to be found among its algebraic extensions (here, we consider that being a free multiple is "un-interesting"). For instance, the malnormal or the pure closure of H are algebraic extensions, as well as its topological closure in the pro-solvable topology. We will also explore in detail the lattice of finite-index extensions of H, which is a sublattice of the lattice of algebraic extensions.

Along the way, we will pay particular interest to algorithmic questions, concerning in particular the computation of the lattice of algebraic extensions and of the various closures of a given subgroup H.

Most of the results we will present were obtained in joint work with A. Miasnikov, P. Silva and E. Ventura.

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