TAMING THE HYDRA: THE WORD PROBLEM AND EXTREME INTEGER COMPRESSION.

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Abstract

For a finitely presented group, the Word Problem asks for an algorithm which declares whether or not words on the generators represent the identity. The Dehn function is the time-complexity of a direct attack on the Word Problem by applying the defining relations.

A “hydra phenomenon” gives rise to novel groups with extremely fast growing (Ackermannian) Dehn functions. I will explain why, nevertheless, there are efficient (polynomial time) solutions to the Word Problems of these groups. The main innovation is a means of computing efficiently with compressed forms of enormous integers.

This is joint work with Will Dison and Eduard Einstein.

Wednesday, 22 October 2014
4:00 pm
Smith Hall 204
Tea and refreshments will be served at 3:45pm.

http://math.newark.rutgers.edu/~xiaowwan/Colloquium/