

“Group Theory International” Online Seminar

Sarah Rees

(University of Newcastle)

“Artin groups of large type”

Thursday, Oct 6, noon (New York Time).

Abstract:

Artin groups are those groups with presentations of the form

$$\langle a_1, \dots, a_n \mid \overbrace{a_i a_j a_i \cdots}^{m_{ij}} = \overbrace{a_j a_i a_j \cdots}^{m_{ij}}, i < j, m_{ij} \in \mathbb{N} \cup \infty, m_{ij} \geq 2 \rangle$$

We say that such a group has large type if each m_{ij} is at least 3.

I'll describe joint work with Derek Holt that describes the set L of shortlex minimal geodesics for any Artin group G of large type, given any ordering of its (natural) generating set, proves both L and the set of all geodesics to be regular sets, and that L provides a shortlex automatic structure for G . Hence G admits a quadratic time solution to the word problem, using a reduction process that mimics Tits' solution to the word problem for Coxeter groups, and has a quadratic Dehn function. Subgroups generated by subgroups of the natural generating set (proved by van der Lek also to be Artin groups) are now seen to be quasiconvex (in fact convex) in G . This work builds on work of Mairesse and Mathéus that identifies the geodesics in dihedral (i.e. 2-generator) Artin groups.

Next presentation: **Oct 20, 2011.** Enric Ventura (*Universitat Politècnica de Catalunya*) TBA