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DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

Colloquium

CONTRACTING GEODESICS IN GRAPHICAL SMALL CANCELLATION GROUPS

Prof. Christopher Cashen
(University of Vienna)

ABSTRACT

A group presentation satisfies a small cancellation condition if the length of the intersection of two relators is small relative to the length of those relators. Basic small cancellation techniques appear as far back as Dehn's solution to the word problem for closed surface groups. In the 60's and 70's small cancellation theory developed into one of the cornerstones of combinatorial group theory. In the early 2000's Gromov introduced graphical small cancellation, where the relators are taken to be all words read on simple closed curves of a labelled graph, and he constructed the groups now known as "Gromov monsters" that were used to provide counterexamples to the Baum-Connes Conjecture with coefficients.

Despite this wild behavior, we will show that graphical small cancellation groups always contain strongly contracting elements. This is a geometric condition that is satisfied, for instance, by every infinite order element of a hyperbolic group. The existence of such elements has some nice algebraic consequences for the group. We also construct examples of finitely generated, torsion-free groups in which all of the elements are strongly contracting, but the group is neither hyperbolic nor a subgroup of a hyperbolic group.

This is joint work with Arzhantseva, Gruber, and Hume.

Wednesday, 7 October 2015
4:00 pm
Smith Hall 204
Tea and refreshments will be served at 3:45pm.
`http://math.newark.rutgers.edu/~xiaowwan/Colloquium/`