Manhattan Algebra Day

Steve Linton

University of St. Andrews

Generalisations of Small Cancellation Theory with Computational Applications

Friday, December 6, 2013
CUNY Graduate Center, Room 4102
1:30pm

Abstract:
If we can show that a group presentation satisfies one of the classical small cancellation conditions then we know a great deal about the group presented. For instance it is infinite and hyperbolic (or at least flat) and we can solve the word problem by a very simple algorithm. This talk will outline recent work with Jeff Burdges, Max Neunhoeffer, Richard Parker and Colva Roney-Dougal in which we generalise these conditions in two ways:

Firstly, we allow ourselves to work in a more general context than just the free group, for instance a free product of finite and free groups, and secondly we allow for "redistribution of curvature" so that a presentation which allows for Van Kampen diagrams in with small positively curved regions could still be regarded as small cancellation provided each such region has to be surrounded by a sufficiently large negatively curved region. In this case we can "redistribute" the curvature until every face, edge and vertex is with negative curvature. We can then show that this proves the group hyperbolic and the word problem solvable.