10w5051
Quasi-isometric rigidity in low dimensional topology
7-12 March, 2010

MEALS

*Breakfast (Buffet): 7:00–9:30 am, Sally Borden Building, Monday–Friday
*Lunch (Buffet): 11:30 am–1:30 pm, Sally Borden Building, Monday–Friday
*Dinner (Buffet): 5:30–7:30 pm, Sally Borden Building, Sunday–Thursday
Coffee Breaks: As per daily schedule, 2nd floor lounge, Corbett Hall
***Please remember to scan your meal card at the host/hostess station in the dining room for each meal.**

MEETING ROOMS

All lectures will be held in Max Bell 158 (Max Bell Building accessible by walkway on 2nd floor of Corbett Hall). LCD projector, overhead projectors and blackboards are available for presentations. Note that the meeting space designated for BIRS is the lower level of Max Bell, Rooms 155–159. Please respect that all other space has been contracted to other Banff Centre guests, including any Food and Beverage in those areas.

SCHEDULE

Sunday
16:00	Check-in begins (Front Desk - Professional Development Centre - open 24 hours)
17:30–19:30	Buffet Dinner, Sally Borden Building
20:00	Informal gathering in 2nd floor lounge, Corbett Hall
	Beverages and a small assortment of snacks are available on a cash honor system.

Monday
7:00–8:45	Breakfast
9:00–9:15	Introduction and Welcome by BIRS Station Manager, Max Bell 159
9:15–10:15	Mladen Bestvina, *The asymptotic dimension of mapping class groups is finite*
10:15–10:45	Coffee Break, 2nd floor lounge, Corbett Hall
10:45–11:45	Christopher Cashen, *Line Patterns in Free Groups*
11:45–13:00	Lunch
13:00–14:00	Guided Tour of The Banff Centre; meet in the 2nd floor lounge, Corbett Hall
14:00–15:00	Jason Behrstock, *Quasi-isometric classification of right angled Artin groups*
15:00–15:30	Coffee Break, 2nd floor lounge, Corbett Hall.
15:30–16:30	Walter Neumann, *Quasi-isometry of 3-manifold groups*
17:30–19:30	Dinner
	Study Hall

Tuesday
7:00–9:00	Breakfast
9:00	Linus Kramer, *Coarse rigidity of euclidean buildings*
10:00	Coffee Break, 2nd floor lounge, Corbett Hall
10:30	Anne Thomas, *Lattices in complete Kac-Moody groups*
11:30–13:30	Lunch
13:30	Group Photo; meet on the front steps of Corbett Hall
14:00	Michael Kapovich, *Ends of groups and harmonic functions*
15:00	Coffee Break, 2nd floor lounge, Corbett Hall.
15:30	Mark Hagen, *LERF after Dani Wise*
17:30–19:30	Dinner
	Study Hall

Wednesday

7:00–9:00	Breakfast
9:00	Mark Sapir, *Dehn functions of groups and asymptotic cones*
10:00	Coffee Break, 2nd floor lounge, Corbett Hall
10:30	Kevin Wortman, *Higher dimensional isoperimetric inequalities for some arithmetic groups*
11:30–13:30	Lunch
	Free Afternoon
17:30–19:30	Dinner
	Study Hall

Thursday

7:00–9:00	Breakfast
9:00	Xiangdong Xie, *Quasiisometries of some negatively curved solvable Lie groups*
10:00	Coffee Break, 2nd floor lounge, Corbett Hall
10:30	Tullia Dymarz, *Bilipschitz equivalence vs. quasi-isometric equivalence*
11:30–13:30	Lunch
14:00	Eduardo Martinez-Pedroza, *Separation of Quasiconvex Subgroups in Relatively Hyperbolic Groups*
15:00	Coffee Break, 2nd floor lounge, Corbett Hall.
15:30	Genevieve Walsh, *Quasi-Isometry classes of hyperbolic knot complements*
17:30–19:30	Dinner
	Study Hall

Friday

7:00–9:00	Breakfast
9:00	Informal Discussions for those participants not taking early flights
	Coffee Break, 2nd floor lounge, Corbett Hall - to START no earlier than 10 am
11:30–13:30	Lunch
Checkout by 12 noon.	

** 5-day workshops are welcome to use BIRS facilities (2nd Floor Lounge, Max Bell Meeting Rooms, Reading Room) until 3 pm on Friday, although participants are still required to checkout of the guest rooms by 12 noon. **

Name of 2010 5-day Workshop
Date of 2010 5-day Workshop

ABSTRACTS
(in alphabetic order by speaker surname)

Speaker: **Jason Behrstock** (CUNY Lehman)
Title: *Quasi-isometric classification of right angled Artin groups*
Abstract: For a large family of right angled Artin groups the quasi-isometric classification can be described in terms of a concept in computer science called "bisimilarity." We will describe this classification and a geometric interpretation of bisimilarity. (Joint work with Walter Neumann and Tadeusz Januszkiewicz.)

Speaker: **Mladen Bestvina** (University of Utah)
Title: *The asymptotic dimension of mapping class groups is finite*
Abstract: I will give an outline of a proof of the statement in the title. The basic construction is of a quasi-tree on which a finite index subgroup of a mapping class group acts. The next stage is to equivariantly blow up the quasi-tree by replacing vertices with curve complexes. The new space still has finite asdim. The final step is to show that the orbit map into a finite product of such spaces quasi-embeds the mapping class group. The last step uses the Masur-Minsky estimate of distances in mapping class groups. This is joint work with Ken Bromberg and Koji Fujiwara.

Speaker: **Christopher Cashen** (University of Utah)
Title: *Line Patterns in Free Groups*
Abstract: Take a word w in a free group F of rank at least 2. Consider a tree T quasi-isometric to F. The cosets of $< w >$ in F correspond to a pattern of lines in T. We study a quotient of the boundary of T related to the line pattern and use the cut set structure of this space to prove quasi-isometric rigidity results for line patterns. With some hypotheses on the complexity of the line pattern, we show that there is a choice of T for which the only quasi-isometries of T that preserve the line pattern are isometries.

These results have applications to quasi-isometric classifications for graphs of free groups, including mapping tori of some free group automorphisms.

This is joint work with Natasa Macura.

Speaker: **Tullia Dymarz** (Yale University)
Title: *Bilipschitz equivalence is not equivalent to quasi-isometric equivalence for finitely generated groups*
Abstract: We show that certain lamplighter groups that are quasi-isometric (even commensurable) are not bilipschitz equivalent. The proof involves structure of quasi-isometries from rigidity theorems, analysis of bilipschitz maps of the n-adics and uniformly finite homology.

Speaker: **Michael Kapovich** (UC Davis)
Title: *Ends of groups and harmonic functions* Abstract:

Speaker: **Linus Kramer** (Universität Münster)
Title: *Coarse rigidity of euclidean buildings*
Abstract: In joint work with R. Weiss, we proved that euclidean buildings are rigid under coarse isometries. The proof relies on an equivariant rigidity result for trees with large automorphism groups. This improves and extends a result by Kleiner and Leeb, where the euclidean buildings were assumed to be thick and to have large automorphism groups.

Speaker: **Eduardo Martinez-Pedroza** (McMaster University)
Title: *Separation of Quasiconvex Subgroups in Relatively Hyperbolic Groups* Abstract: (Joint work with

Jason Manning.) It is unknown whether there exists a hyperbolic group which is not residually finite. Under the assumption that there is no such group, we deduce the separability of all quasiconvex subgroups of relatively hyperbolic groups with peripheral structure consisting of virtually nilpotent subgroups, extending a result by Agol-Groves-Manning.

Speaker: **Walter Neumann** (Columbia University)
Title: *Quasi-isometry of 3-manifold groups*
Abstract: The program, started in the early 90's, of classifying 3-manifold groups up to quasi-isometry, is now almost complete; the only cases remaining are some rare cases with "too many" arithmetic hyperbolic JSJ components. But interesting problems remain, especially in understanding the relationship with commensurability, where results are surprising, but depend in part on hard conjectures about hyperbolic groups. The classification is in terms of equivalence classes under "bisimilarity" (a concept from computer science) of weighted graphs. (Joint work with Jason Behrstock.)

Speaker: **Mark Sapir** (Vanderbilt University)
Title: *Dehn functions of groups and asymptotic cones* Abstract: I will talk about joint results with A. Olshanskii on Dehn functions of groups (in particular, we construct a finitely generated group with undecidable word problem and "almost quadratic" Dehn function), and some conjectures relating Dehn functions and asymptotic cones of groups.

Speaker: **Genevieve Walsh** (Tufts University)
Title: *Quasi-Isometry classes of hyperbolic knot complements* Abstract: We will show that, generically, there are only 3 hyperbolic knot complements in a quasi-isometry class. By work of R. Schwartz, this is equivalent to showing that there are 3 hyperbolic knot complements in a commensurability class, and we use commensurability methods for the proof. We will also discuss some aspects of the symmetry groups of commensurable knot complements. This is joint work with M. Boileau and S. Boyer.

Speaker: **Xiangdong Xie** (Georgia Southern University)
Title: *Quasiisometries of some negatively curved solvable Lie groups*
Abstract: Let A be an $n \times n$ matrix. Let R act on R^n by $(t, x) \to e^{tA}x$ ($t \in R$, $x \in R^n$). Denote the corresponding semi-direct product by $G_A = R^n \rtimes_A R$. If the eigenvalues of A have positive real parts, then G_A admits left-invariant Riemannian metrics with negative curvature.

We classify all these G_A up to quasiisometry. We show that all quasiisometries between such manifolds (except when they are biLipschitz to the real hyperbolic spaces) are almost similarities. We prove these results by studying the quasisymmetric maps on the ideal boundary of these manifolds.