UNIVERSITY of WISCONSIN
UWMILWAUKEE
Department of
Mathematical Sciences

Topology Seminar

Ms. Rylee Lyman

PhD Candidate

Tufts University

Monday,
Mar 30, 2020
at 2:00 pm
Online via
Microsoft Team's:
https://tinyurl.com/UWMTopology

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Some New CAT(0) Free-by-Cyclic Groups

As with fundamental groups of 3-manifolds fibering over the circle, free-by-cyclic groups form a varied and interesting class of groups whose geometry depends in large part on the corresponding monodromy, in this case an outer automorphism of the free group. For example, Hagen and Wise showed that word-hyperbolic free-by-cyclic groups act virtually cospecially on CAT(0) cube complexes, while Gersten found an example of a free-by-cyclic group that cannot be even a subgroup of a CAT(0) group. Gersten's group admits a cyclic hierarchy, an iterated splitting as a graph of groups with free-by-cyclic vertex groups and cyclic edge groups, terminating in Z times Z. By contrast, we show that a large class of free-by-cyclic groups admitting an additional symmetry act geometrically on CAT(0) 2-complexes. Up to taking powers this includes mapping tori of all polynomially-growing palindromic and symmetric automorphisms. A key tool in the proof is our construction of so-called CTs for free products.

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