UNIVERSITY AT ALBANY
State University of New York

Algebra/Topology Seminar

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Edge Stabilization in the Homology of Graph Braid Groups

Thursday, May 3, 2018
1:15 p.m. in ES-143

Abstract. We discuss a novel type of stabilization map on the configuration spaces of a graph, which increases the number of particles occupying an edge. Through these maps, the homology of the configuration spaces forms a module over the polynomial ring generated by the edges of the graph, and we show that this module is finitely generated, implying eventual polynomial growth of Betti numbers over any field. Moreover, the action lifts to an action at the level of singular chains, which contains strictly more information; indeed, we show that this differential graded module is almost never formal over the ring of edges. These results, along with numerous calculations, arise from consideration of an explicit chain complex, which is a structured enhancement of a cellular model first considered by Świątkowski. We arrive at this model through a local-to-global approach combining ideas from factorization homology and discrete Morse theory. This is joint work with Byung Hee An and Gabriel Drummond-Cole.