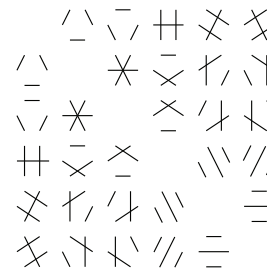


Mathematics Seminar



Rocky Mountain Algebraic Combinatorics Seminar

Graph Complexes and Kontsevich Theorem

Martin Kassabov
Cornell University

I will explain a theorem of Kontsevich which connects three seemingly different objects – one is the homology of a combinatorial complex constructed from finite graphs; the second is the cohomology of certain infinite-dimensional Lie algebras; and finally, the cohomology of the groups $Out(F_n)$ which are central objects in geometric group theory. I will explain what is known about the resulting (co)homology and outline how each of the three viewpoints has some advantages for computations.

Cubical Arrays of Projective Planes and Huang's Graphs.

Eric Moorhouse
University of Wyoming

Two mini-talks in 50 minutes flat:

1. Cubical Arrays of Projective Planes Let $N = n^2 + n + 1$ where n is a positive integer. How can one construct cubical $N \times N \times N$ arrays of 0's and 1's, for which all $3N$ 'cross sections' (fixing one index at a time) are incidence matrices of projective planes? I will describe the geometric motivation for this old question, and the few known examples, all of which use classical planes built from planar difference sets.

2. Huang's Graphs The crux of Hao Huang's very recent proof of the Sensitivity Conjecture uses an infinite family of graphs which are double covers of n -cubes. While the result is new, the graphs are very natural and have been studied for a long time. I will outline the proof of the Sensitivity Conjecture, including the role played by these graphs.

Weber 223
4–6 pm, Friday, Oct 11, 2019
(Refreshments in Weber 117, 3:30–4 pm)
Colorado State University

This is a joint Denver U / UC Boulder / UC Denver / U of Wyoming / CSU seminar that meets biweekly.
Anyone interested is welcome to join us at a local restaurant for dinner after the talks.



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