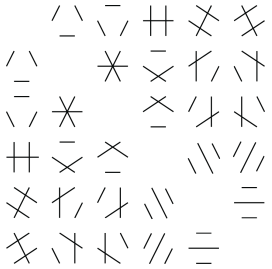
Mathematics Seminar



Rocky Mountain Algebraic Combinatorics Seminar

Representations Arising from an Action on D-neighborhoods of Cayley Graphs

Justin Hughes
Colorado State University

Given G a finite group and a generating set, one can construct the Cayley Graph. With a set D comprised of nonnegative integers one can construct a D-neighborhood complex from the Cayley Graph. This neighborhood complex is a simplicial complex and thus it is natural to form an associated chain complex. The group G acts naturally on the chain complex and this leads to an action on the homology of the chain complex. These group actions give rise to several representations of G. This work uses tools from group theory, representation theory and homological algebra to further our understanding of the interplay between generated groups (i.e. a group together with a set of generators), corresponding representations on their associated D-neighborhood complexes, and the homology of the D-neighborhood complexes.

Longer Nilpotent Series for Classical Unipotent Groups

Josh Maglione
Colorado State University

We compute the adjoint series for the unipotent subgroup, U, of the Chevalley group $A_d(Z_p)$. The adjoint series of U has length $d^2/4 + d/2 + \Theta(1)$, whereas the length of the lower central series (LCS) of U has length $d + 1$. However, the factors of the adjoint series of U have order p or p^2 while the factors of the LCS of U have order $p^{O(d)}$. We illustrate the implications of using the adjoint series in isomorphism testing.

Weber 223
4–6 pm
Friday, November 22, 2013
(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.

Colorado State University

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