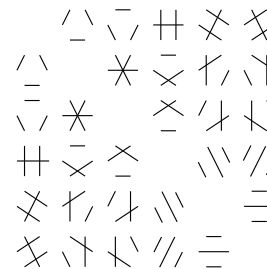


Mathematics Seminar



Rocky Mountain Algebraic Combinatorics Seminar

A representation theory for tensors

Sean Willmot
Colorado State University

We use standard homogeneous module theory as a basis for constructing a heterogeneous generalization as it applies to tensors. In particular, we start by redefining modules, representations, and several related concepts in terms of bilinear maps and then develop basic category theoretic language for handling them. This leads to the discovery of multiple heterogeneous objects which do not have a proper homogeneous analog. We then develop the tools for addressing a heterogeneous Frobenius Reciprocity Theorem, including the concepts of restriction and induction, and apply these to recover part of this theorem as it pertains to bilinear maps.

On the automorphism group of a putative Conway 99-graph

Patrick Cesarz
University of Wyoming

Let Γ be a Conway 99-graph, that is, a strongly regular graph with parameters $(99,14,1,2)$. Makhnev and Minakova prove that the automorphism group G of Γ must have order dividing $2 \cdot 33 \cdot 7 \cdot 11$. They further show that if $|G|$ is divisible by 2 then $|G|$ must divide 42. Subsequently Behbahani and Lam prove that the only prime divisors of $|G|$ are 2 and 3. However their results depended heavily on the aid of a computer. In this talk we discuss how we were able to obtain computer-free proofs that establish that divisibility by 7 implies $G \cong Z_7$. As a consequence, divisibility by 2 implies $|G|$ divides 6, i.e. G is isomorphic to one of Z_2, Z_6, S_3 .

Weber 223
4–6 pm, Friday, April 5, 2024
(Refreshments 3:30–4 pm)
Colorado State University
4 pm, Friday, April 5, 2024

This is a joint Denver U / UC Boulder / 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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