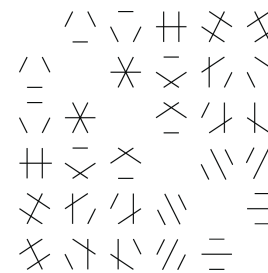# Mathematics Seminar

Rocky Mountain Algebraic Combinatorics Seminar

On communication over networks via skew polynomials

Felice Manganiello
Clemson University

In this seminar we will explore network communication schemes based on particular mathematical structures. It has been proven that linear network coding is enough to achieve the capacity of multicast networks. We are going to talk about the generalization of linear coding to a technique based on matroids. We then focus on the ring of skew polynomials, study the matroid structure behind their zero locus and see the benefit of applying this matroid to multicast networks. If time permits we will look into other type of networks.

Some General Remarks on Isomorphism Testing

Eric Moorhouse
University of Wyoming

Among the many aspects arising in the investigation of algebraic and combinatorial structures, one of the most common questions that generally arises (and often the most difficult) is the task of resolving examples into isomorphism classes (and, what may often be viewed as the same problem, determining full automorphism groups). Identified this broadly, the problem applies not just to specific examples (where black-box computer tools may be appropriate, and sometimes even sufficient for effective solution) but also to infinite families, where more general structure theory is required. One naturally tries to employ isomorphism invariants; but in my personal experience, these are often more successful in computationally distinguishing specific individual structures, and less amenable to more general theoretical results. I hope to share some experiences (some successes but also many open questions) in isomorphism testing for a variety of structures including graphs, loops, projective planes, ovoids, spreads, and Hadamard matrices.

Weber 223
4–6 pm
Friday, March 6, 2015
(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