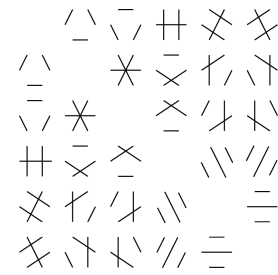# Mathematics Seminar

Rocky Mountain Algebraic Combinatorics Seminar

Automorphic Loops: A Survey and Recent Progress

Michael Kinyon
University of Denver

The multiplication group $\mathrm{Mlt}(G)$ of a group G is just the permutation group generated by all left and right translations, which is essentially what you get when you think of both the left and right regular representations simultaneously. The inner automorphism group $\mathrm{Inn}(G)$ can then be characterized as the stabilizer in $\mathrm{Mlt}(G)$ of the identity element of G.

In the nonassociative world, if Q is a loop, then the same definitions give the multiplication group $\mathrm{Mlt}(Q)$ and the inner mapping group $\mathrm{Inn}(Q)$, but the latter does not necessarily act as automorphisms of Q. A loop is said to be *automorphic* if every inner mapping is an automorphism. Thus automorphic loops include groups but much more that.

This talk will start with a survey of automorphic loops, including a potted history and ending with the current state of the art. The main open problem is the existence or nonexistence of a finite, simple, nonassociative, automorphic loop, and I will talk about results both published and unpublished regarding them.

On the classification of involutory latin quandles

Petr Vojtěchovský
University of Denver

Quandles are binary algebras designed for colorings of arcs in knot diagrams that are invariant under Reidemeister moves. Quandles also solve the quantum Yang-Baxter equation. It is therefore of considerable interest to construct well-structured families of quandles. In this talk I will present a classification of involutory latin quandles of order p*q (using group actions on periodic sequences over finite fields) and also a computer enumeration of involutory latin quandles of odd prime power order (using central extensions).

Weber 223
4–6 pm
Friday, November 10, 2017
(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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