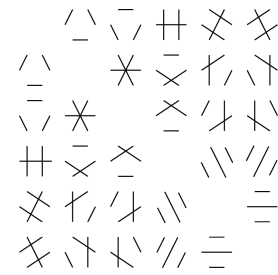# Mathematics Seminar

Rocky Mountain Algebraic Combinatorics Seminar

Algorithms for linear groups

Eamonn O'Brien

University of Auckland, New Zealand

We review progress over the past 30 years in developing effective algorithms for linear groups.

Moufang's theorem and Steiner loops

Izabella Stuhl

University of Denver, University of Debrecen

Steiner triple systems play a major part in combinatorics; many interesting connections have been developed between their combinatorial and algebraic aspects. From this point of view, the study of their algebraic background can be useful. This generates an interest towards Steiner quasigroups and loops.

In this context we study Moufang's theorem for Steiner loops and its consequences for Steiner triple systems.

A loop satisfies Moufang's theorem whenever the subloop generated by any three associating elements is a group. Moufang loops satisfy Moufang's theorem, but it is also possible for a loop that is not Moufang to satisfy Moufang's theorem. Steiner loops that are not Moufang loops are known to arise from Steiner triple systems in which some triangle does not generate a subsystem of order 7, while Steiner loops that do not satisfy Moufang's theorem are shown to arise from Steiner triple systems in which some Pasch configuration does not generate a subsystem of order 7. Furthermore, examples are given of non-commutative loops that satisfy Moufang's theorem and yet are not Moufang loops and have connections with Steiner triple systems.

Weber 223
4–6 pm
Friday, April 1, 2016
(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.