Combinatorics Seminar

Monday, Oct. 12, 2009

2:00 pm in Hume 331

Dr. X. Zhou

Department of Mathematics and Statistics
wright state university

Clones in representable matroids over a finite field

ABSTRACT

A matroid is a pair $(E,\mathcal{I})$ where E is a finite set and $\mathcal{I}$ is a collection of subsets of E that satisfies the following axioms:

1) $\emptyset \in \mathcal{I}$;

2) if $I \in \mathcal{I}$ and $I' \subseteq I$, then $I' \in mathcalI$;

3) if $I, J \in \mathcal{I}$ and $|I| < |J|$, then there exists $x \in J \backslash I$ such that $I \cup \{x\} \in \mathcal{I}$.

Two elements x and y of a matroid M are clones if the map that interchanges x and y and that fixes all other elements is an automorphism of M.

It is clear that if E is the set of columns of a matrix over a field and $\mathcal{I}$ is the collection of subsets of E that are linearly independent, then $(E,\mathcal{I})$ is a matroid. Such a matroid is essentially a sub-structure of the projective space over that field.

We study clones in matroids that arise from matrices over a finite field. This is joint work with Reid, Robbins, and Wu.