Graph and knot colourings

ANDRES ARANDA, University of Calgary
Imprimitive ultrahomogenenous simple 3-graphs

A 3-graph is a complete edge-coloured graph in which the colour set is of size 3. A relational structure M is ultrahomogeneous if every isomorphism between finite substructures can be extended to an an automorphism of M. We show that there exists a unique imprimitive 3-graph with simple unstable theory in which the imprimitivity blocks are finite and all three predicates are realised in the union of two blocks.

SALLY COCKBURN, Hamilton College
Preimages of geometric paths and cycles

A graph H is a preimage of G, equivalently is G-colourable, if there exists a homomorphism $H \to G$. A geometric graph $\overline{G}$ consists of G and a straightline drawing, or geometric realization, of G; a geo-homomorphism $\overline{H} \to \overline{G}$ is a homomorphism $H \to G$ that preserves edge crossings. The homomorphism poset $\mathcal{G}$ is the set of geometric realizations of G ordered by geo-homomorphisms. Then $\overline{H}$ is $\mathcal{G}$-colourable if $\overline{H} \to \overline{G}$ for some $\overline{G} \in \mathcal{G}$. I characterize $\mathcal{C}_n$-colourable and $\mathcal{P}_n$-colourable geometric graphs for $n \leq 5$.

AYSEL EREY, Dalhousie University
Extremal Restraints for Graph Colourings

A *k-restraint* r on a graph G is a function which assigns each vertex of G exactly k forbidden colours. We discuss recent results on the following problem: among all k-restraints r on G which restraint permits the largest or smallest number of colourings? (Joint work with Jason Brown)

PETR VOJTECHOVSKY, University of Denver
Connected quandles and transitive groups

Quandles are algebraic and combinatorial structures designed to capture knot colorings. Connected quandles are the basic building blocks of all quandles. We show how to represent connected quandles as certain configurations in transitive groups and how to use this representation to efficiently enumerate small connected quandles. This is joint work with Alexander Hulpke and David Stanovsky.