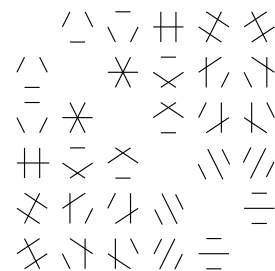


Mathematics Seminar



Rocky Mountain Algebraic Combinatorics Seminar

Synchronization, diagonal structures, and the Hall–Paige conjecture

Peter Cameron
University of St Andrews

I will begin by telling you some of the story of *synchronization*, an investigation of permutation groups that has its origins in automata theory and semigroup theory; this work is mainly with João Araújo, along with several others.

Synchronizing permutation groups are primitive, so it is natural to look at (a simplified form of) the O’Nan–Scott classification of primitive groups. One of the types we have to deal with is *diagonal type*. The problem has been almost completely solved for these; this uses the solution of the celebrated *Hall–Paige conjecture* concerning perfect mappings in groups by Stewart Wilcox, Anthony Evans and John Bray.

This analysis prompted a closer look at diagonal type. The wreath products and affine groups preserve well-known geometric or combinatorial structures; such structures are not so well understood for diagonal type. With Rosemary Bailey, Cheryl Praeger and Csaba Schneider, I have just managed to find a beautiful characterisation of the combinatorial structures that diagonal groups preserve, which is not even written down yet; but if the proof is still standing by the time of the talk I will tell you about it.

Online via Zoom

<https://zoom.us/j/987650880?pwd=WH1XOE5RS1B1Wk11a2Zza2FqVTZKUT09>

4 pm, Friday, Apr 24, 2020

Get together online starting at 3:30 pm

This is a joint Denver U / UC Boulder / UC Denver / U of Wyoming / CSU seminar that meets biweekly.



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